

Fig. 1A

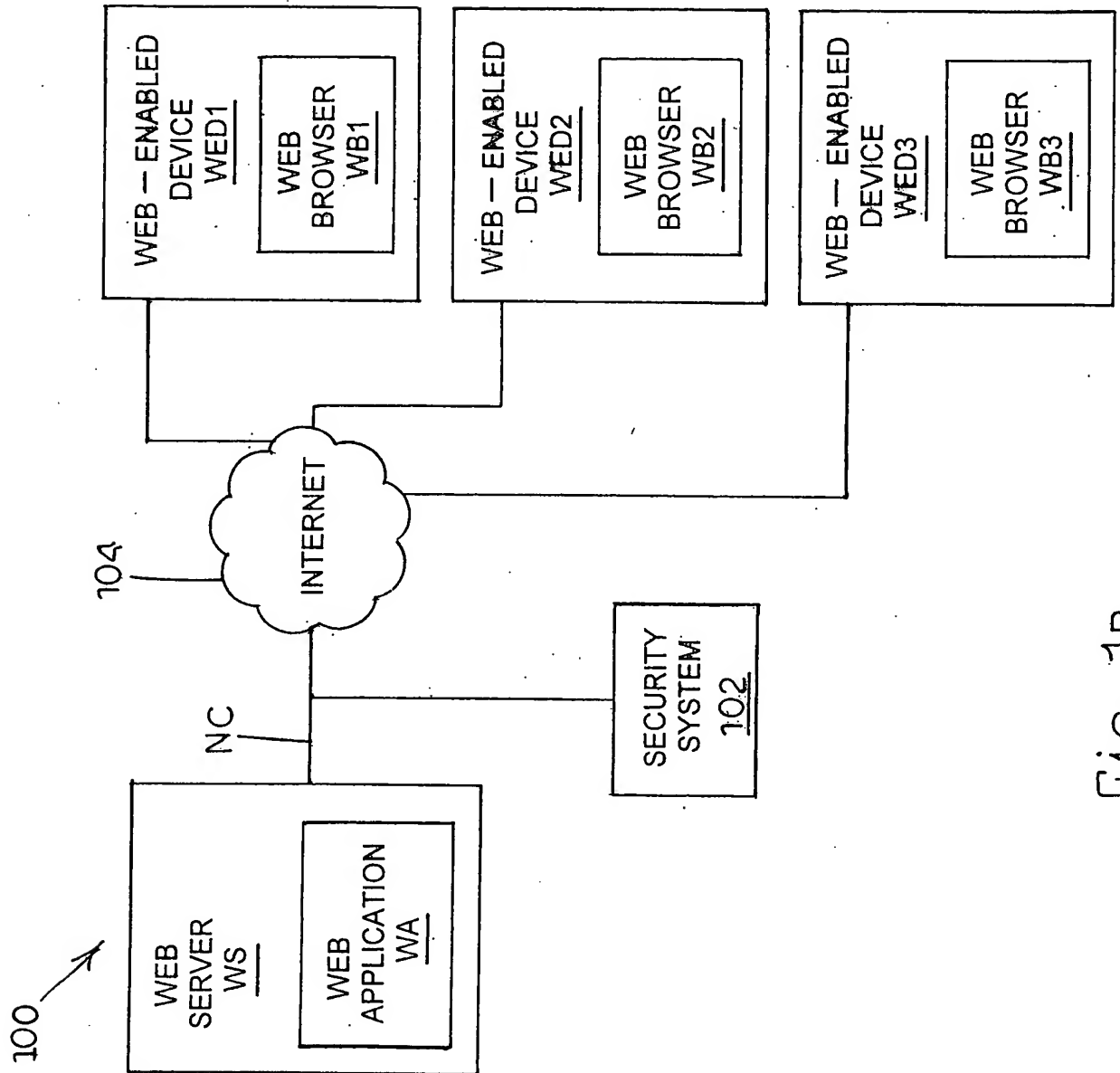


Fig. 1B

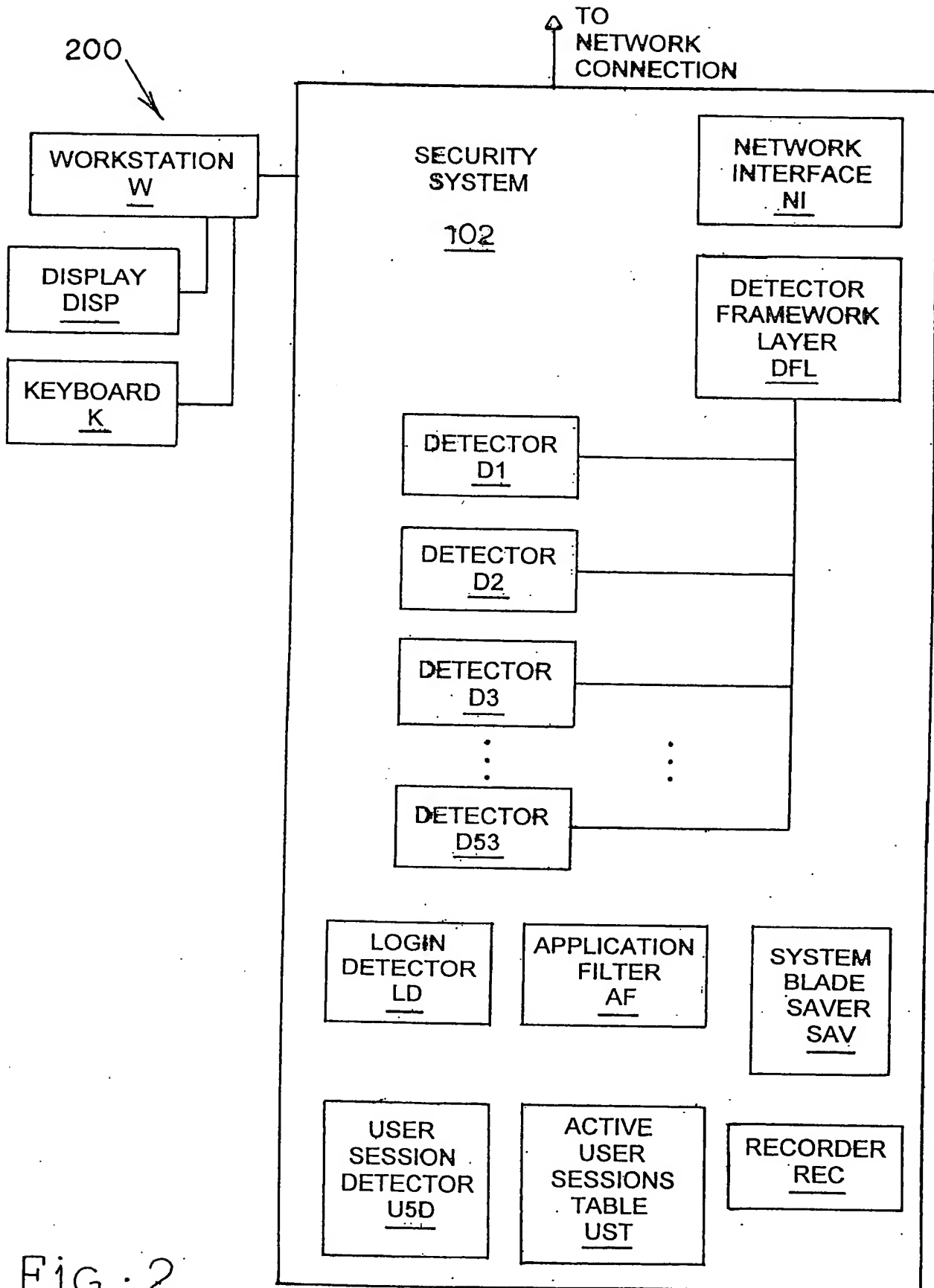


Fig. 2

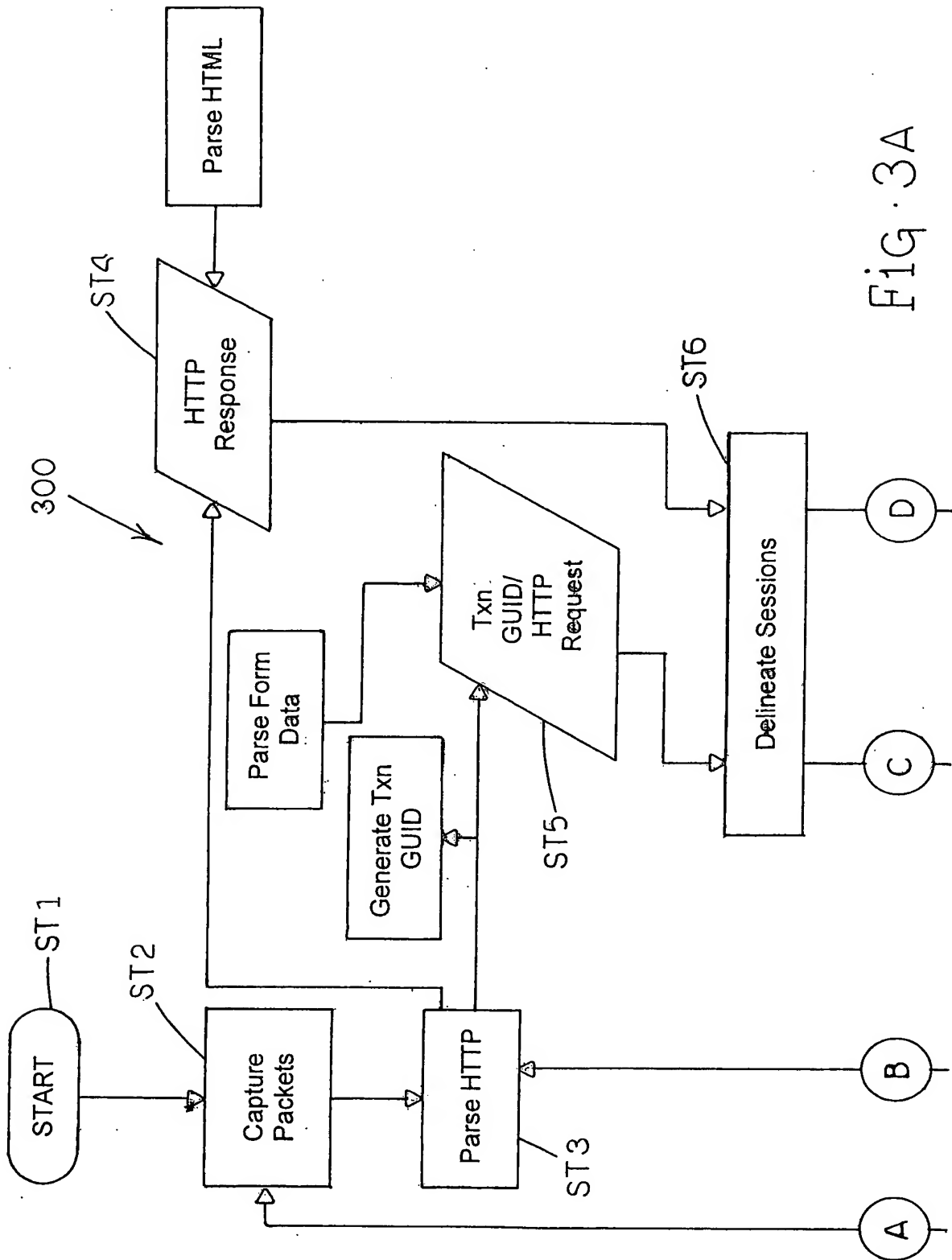
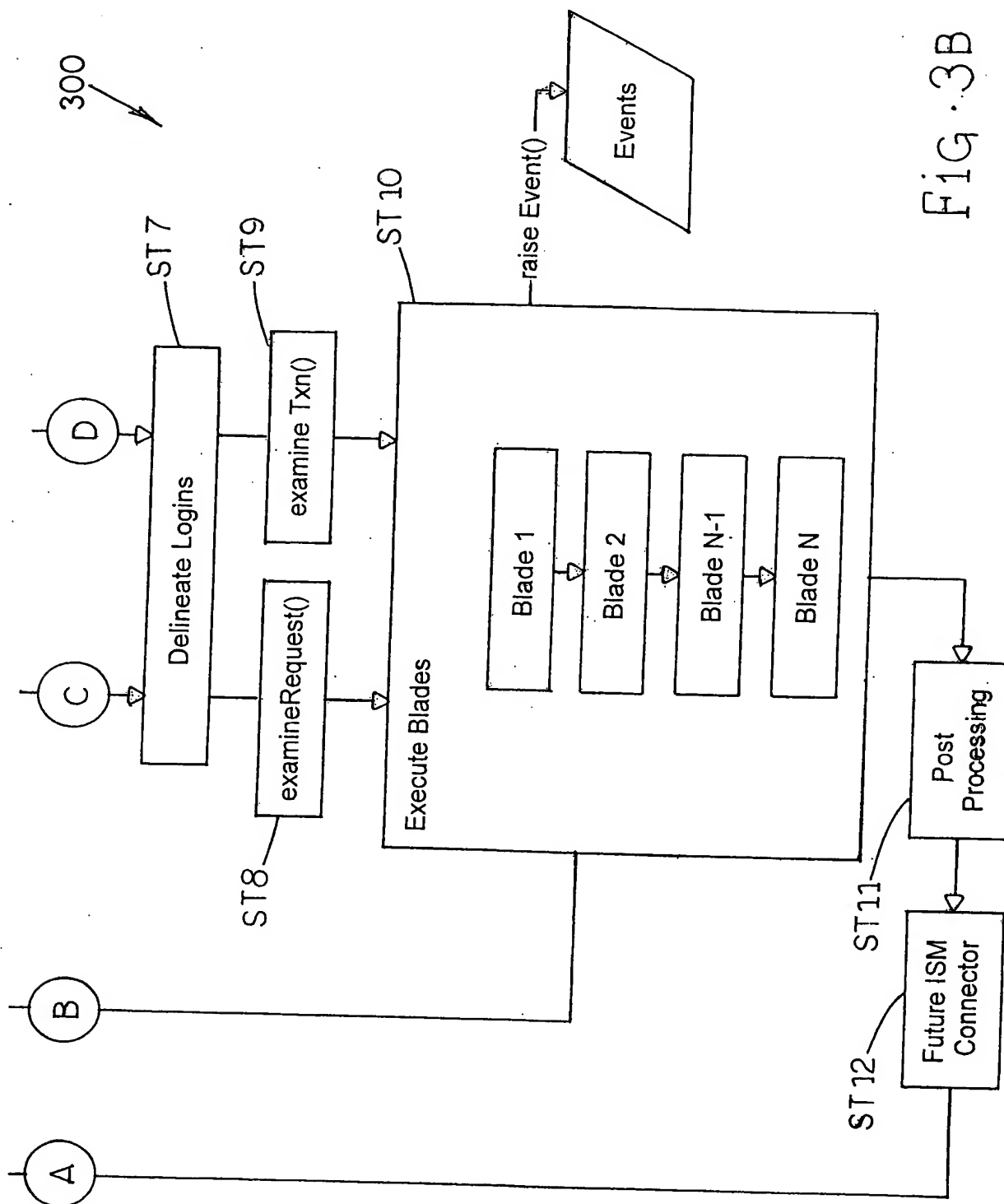


Fig. 3A



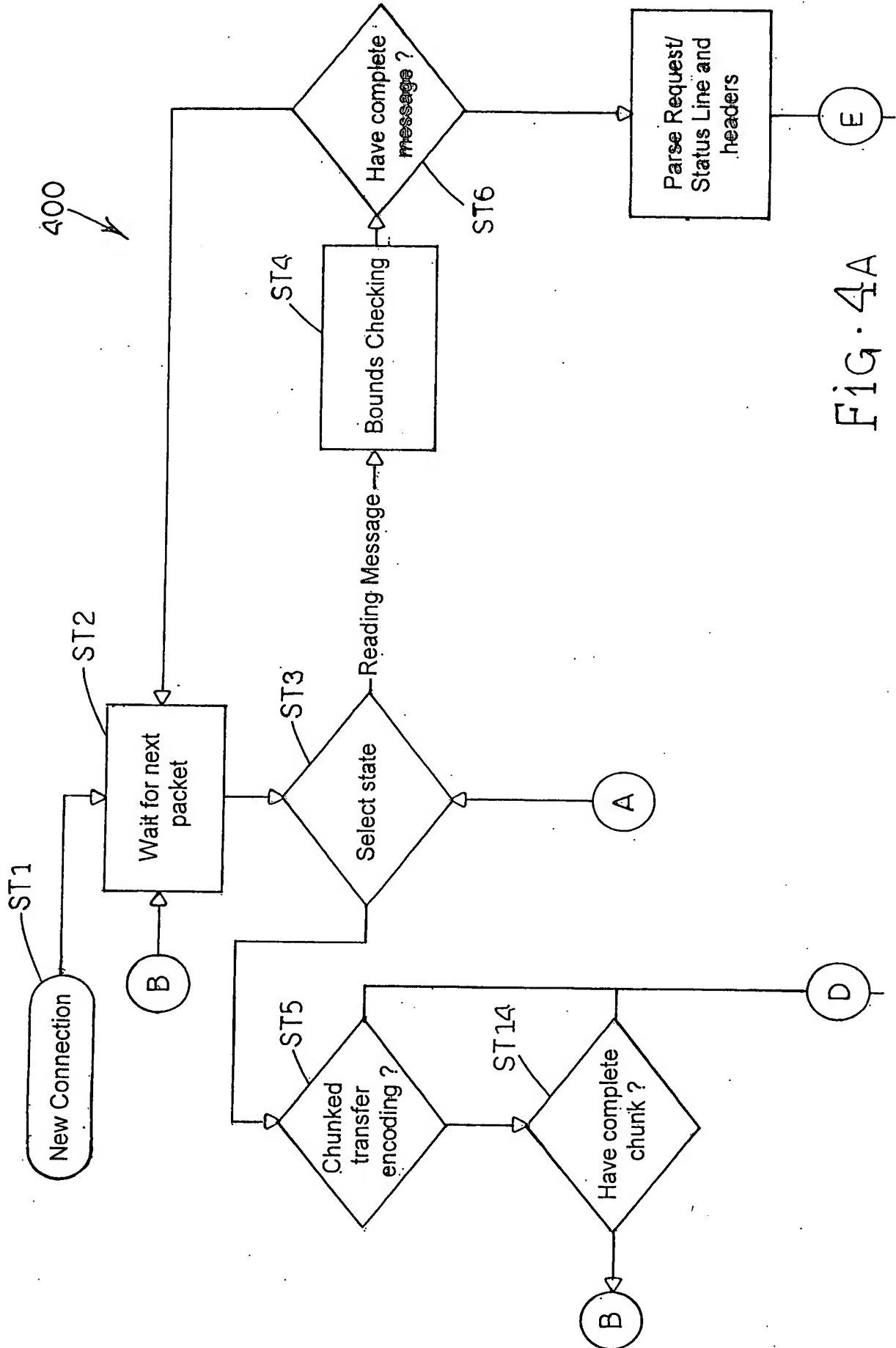


FIG. 4A

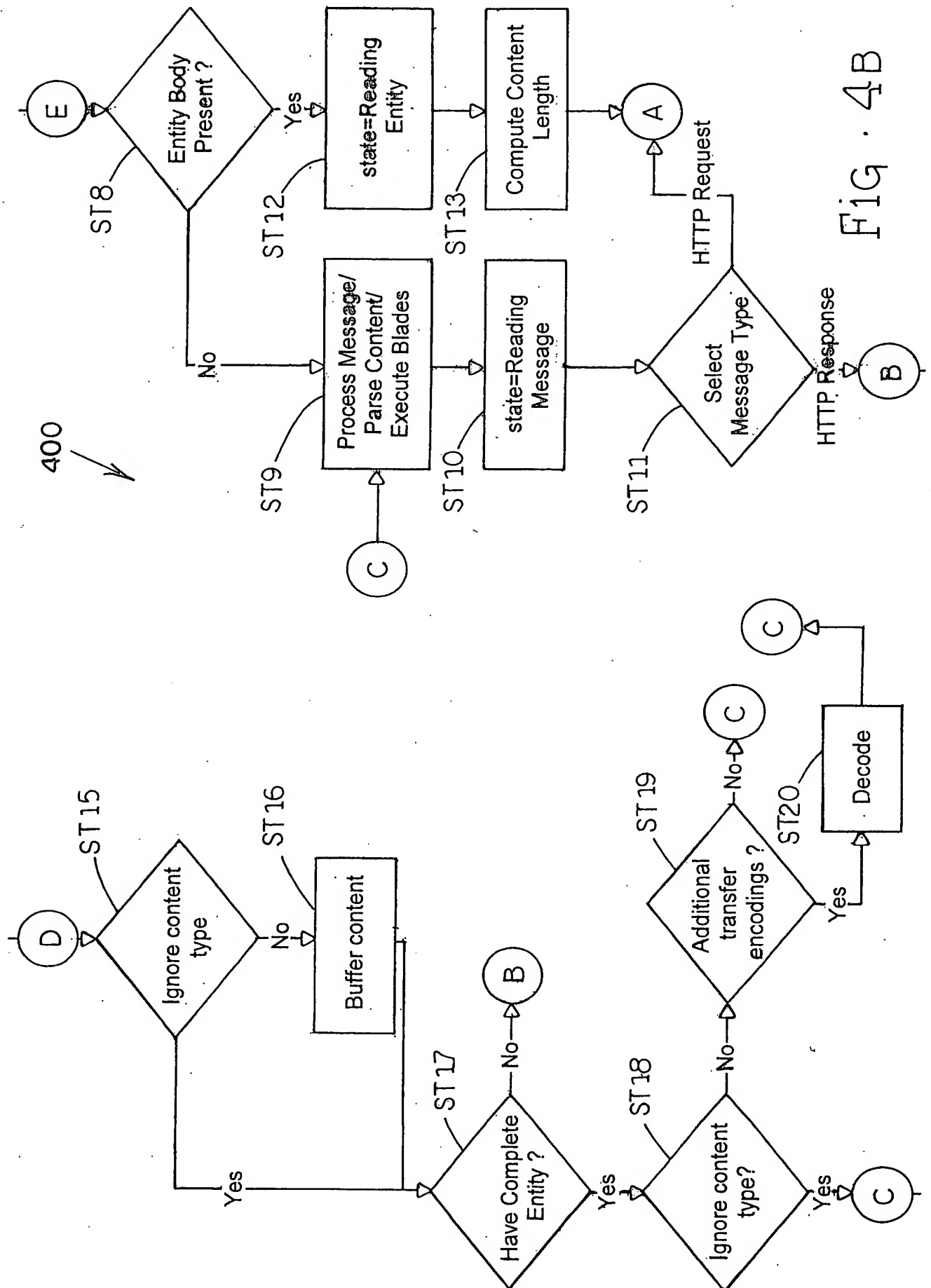


Fig. 4B

500

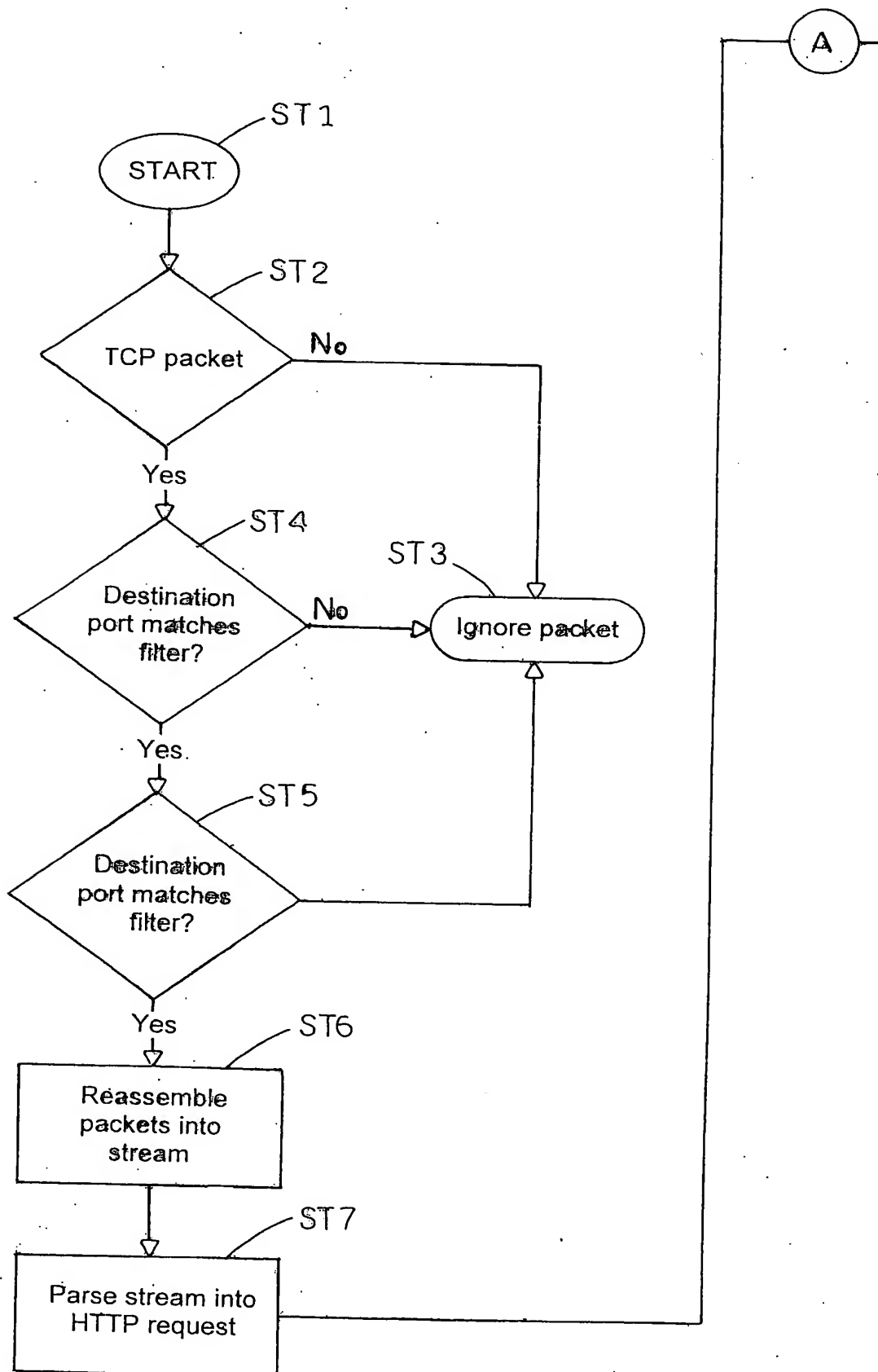
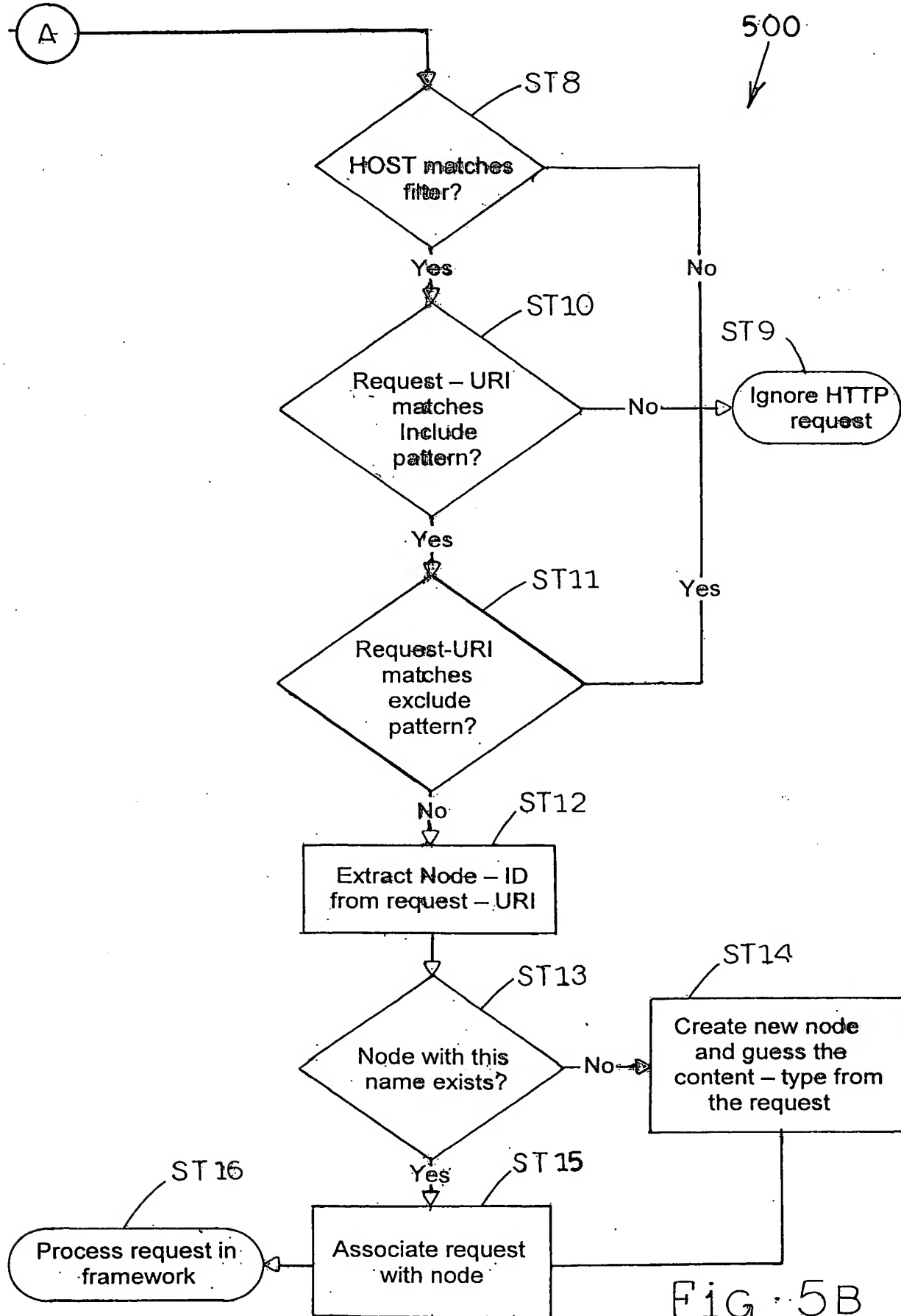
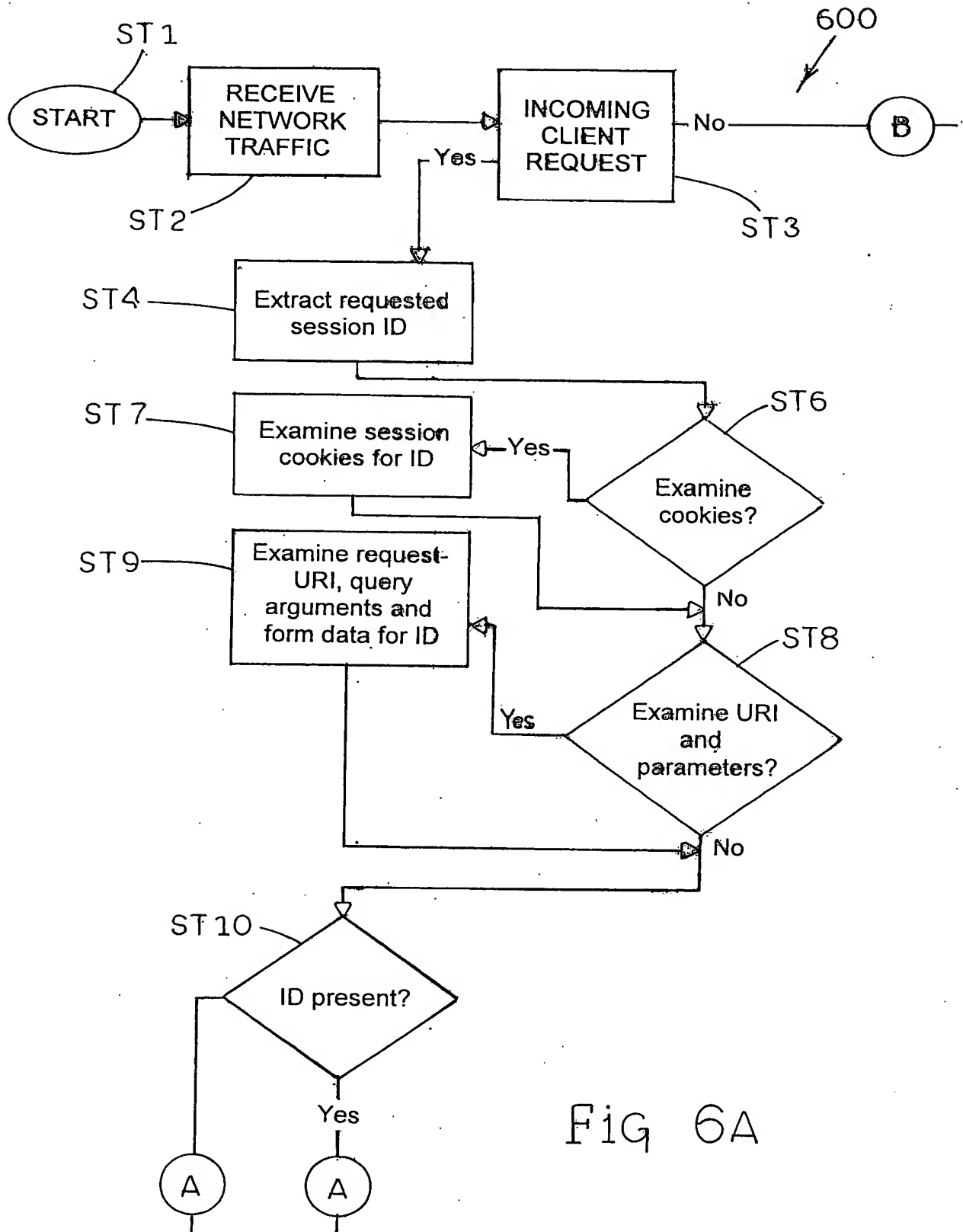
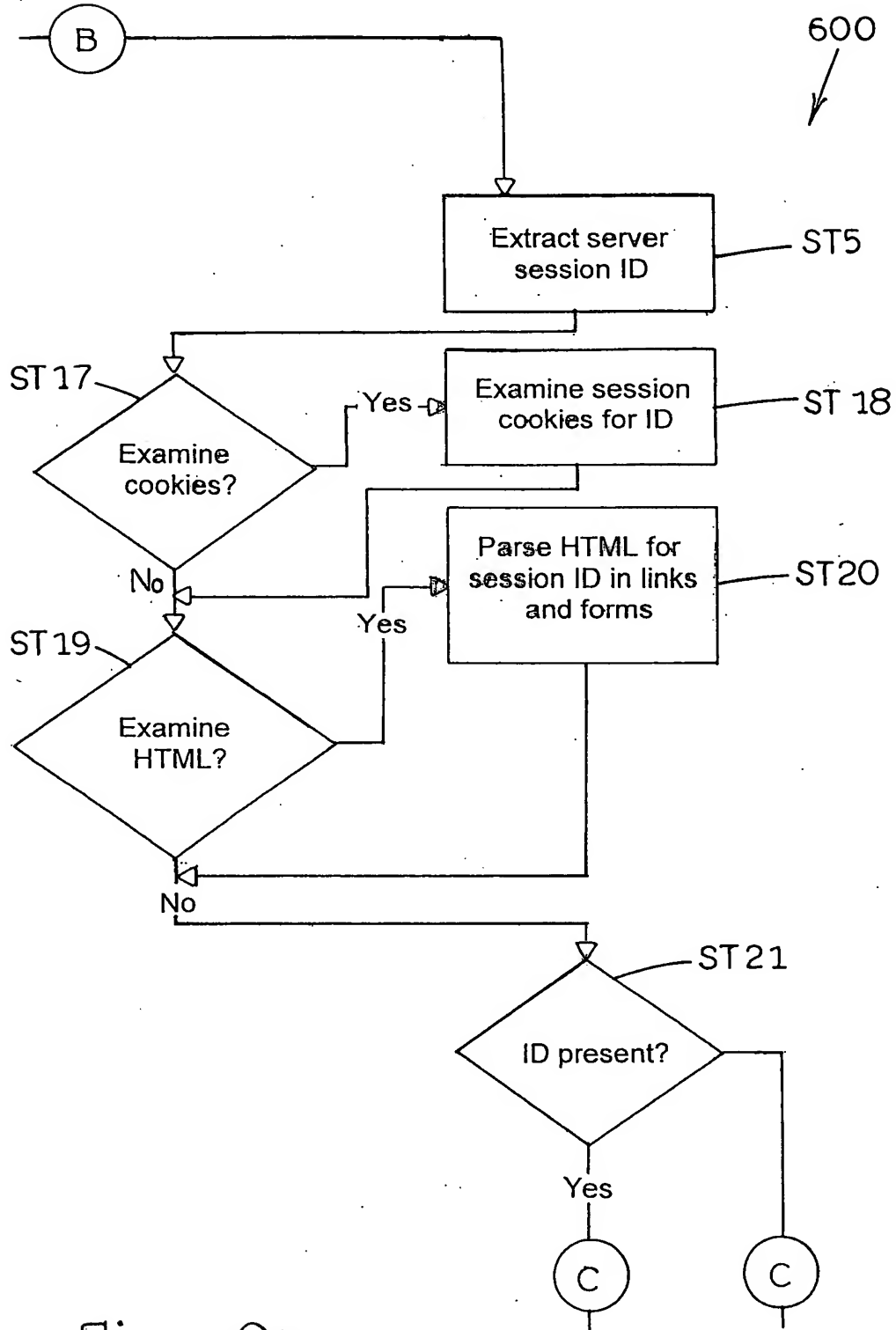
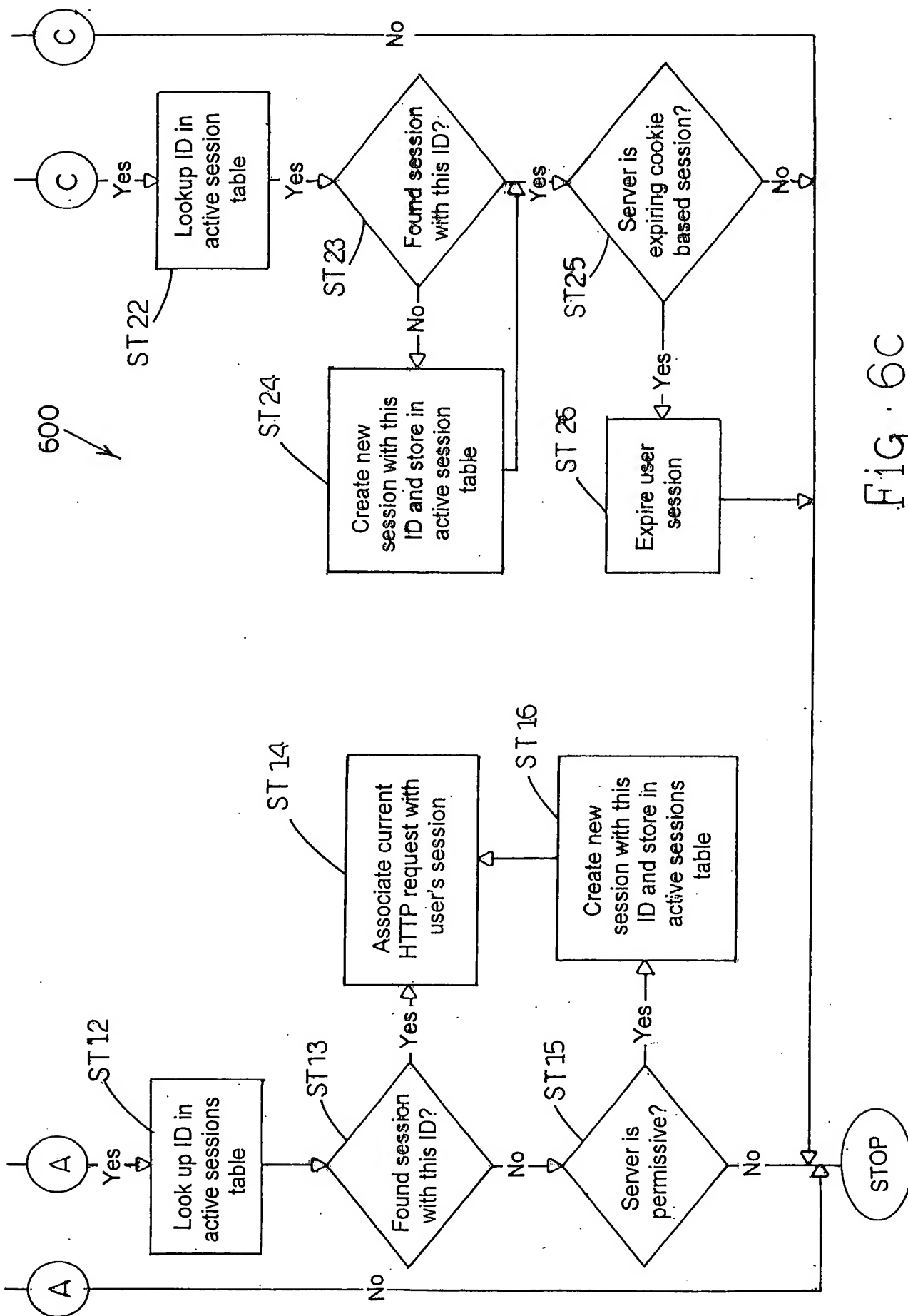


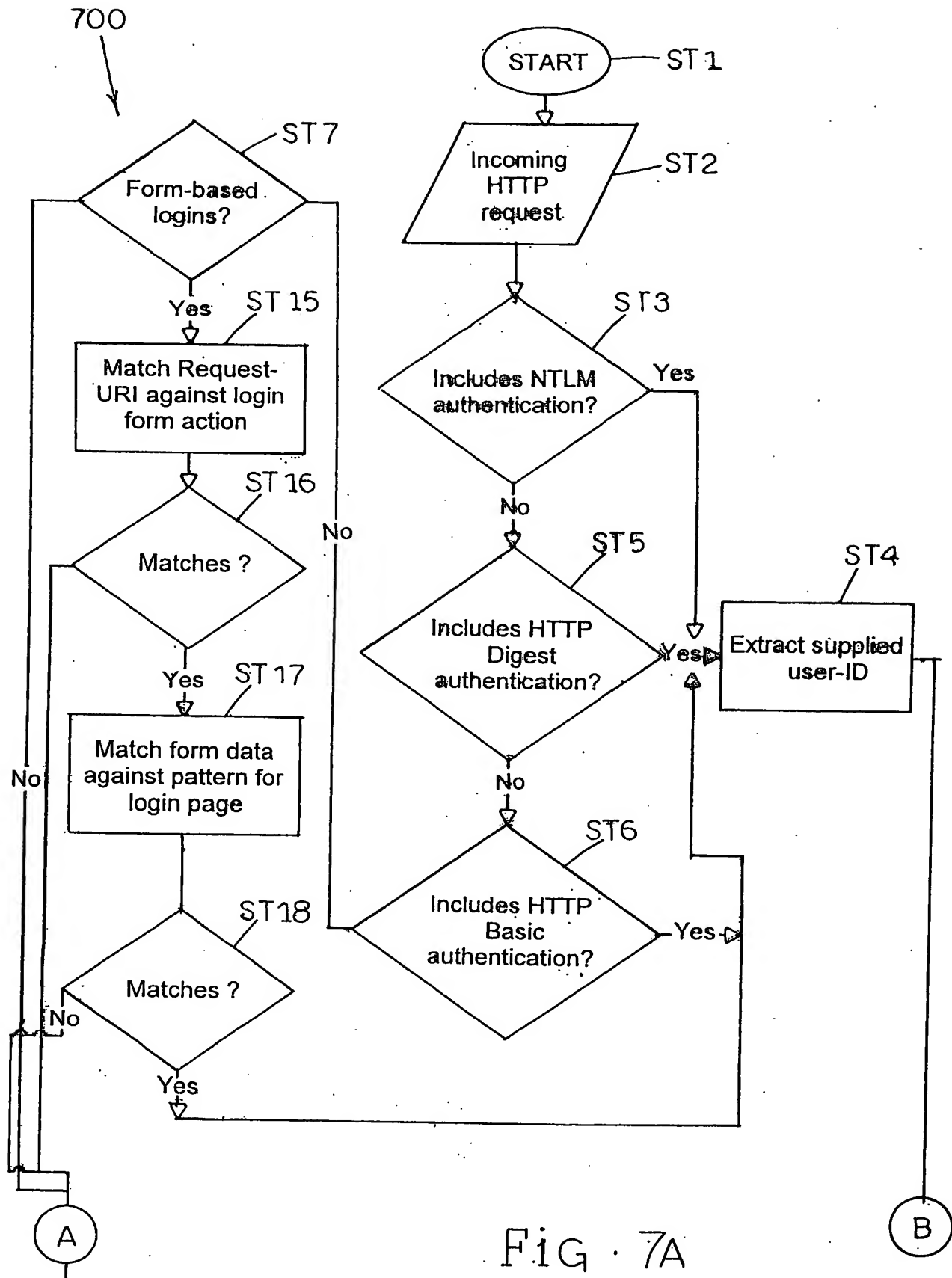
Fig. 5A











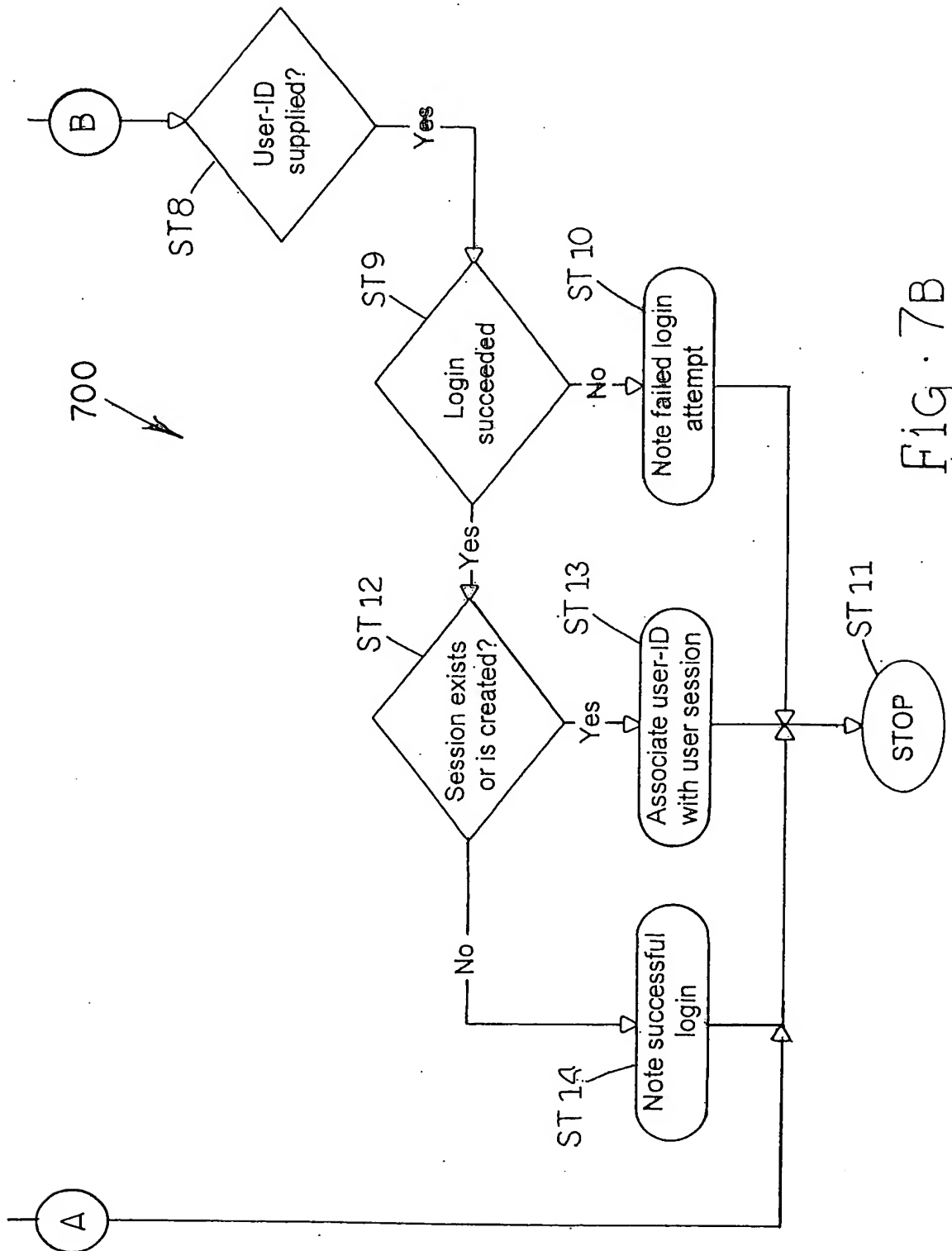


Fig. 7B

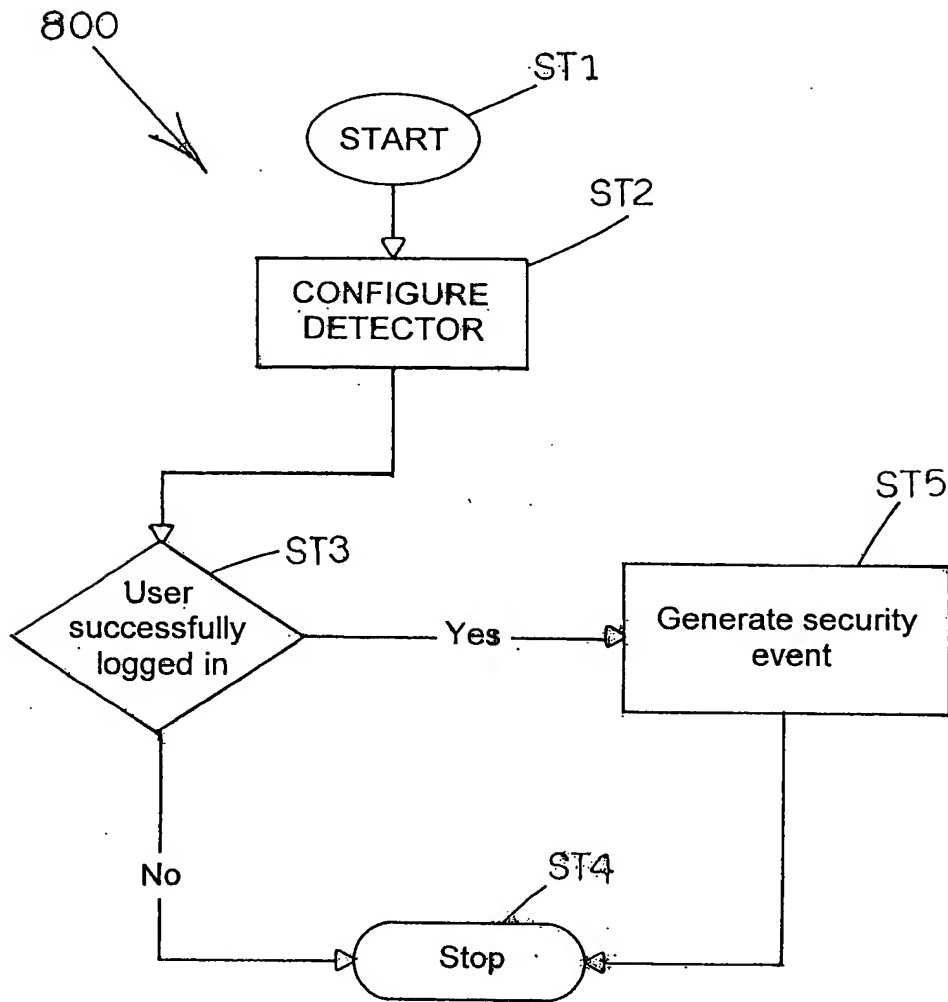


Fig. 8

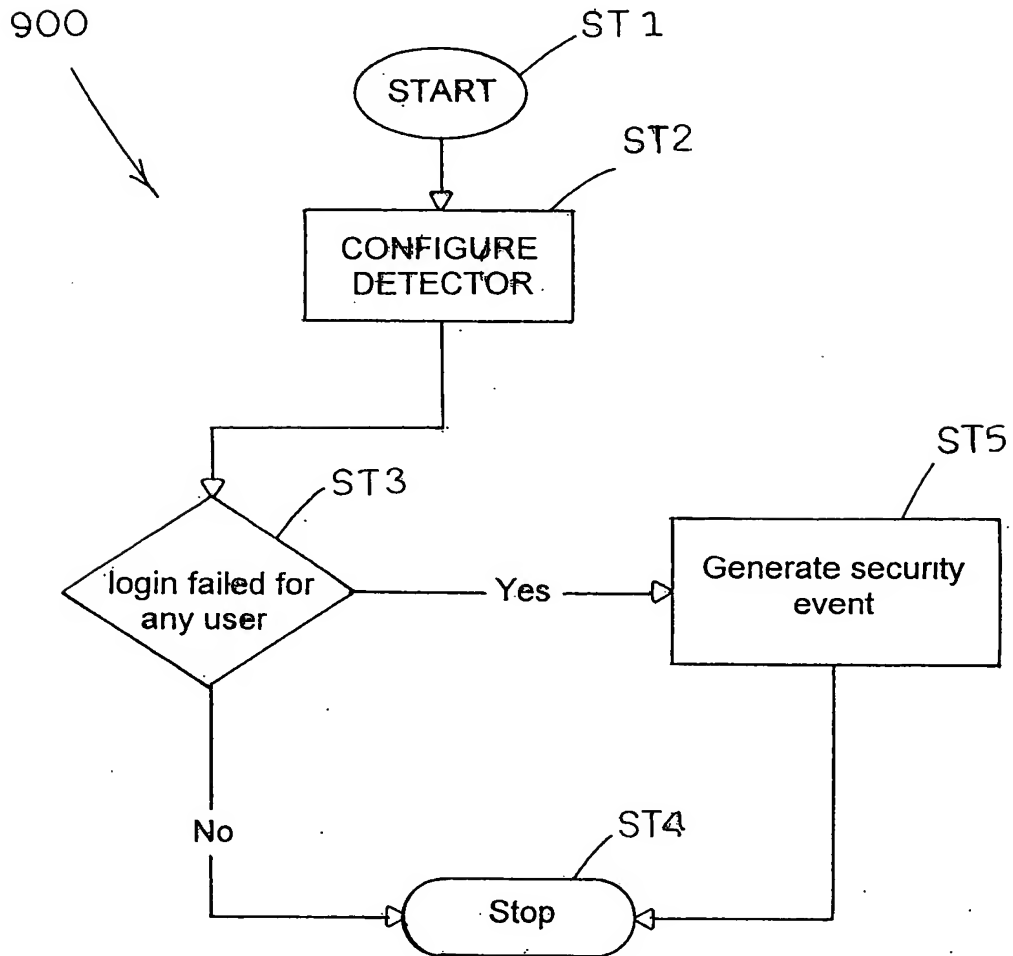


Fig. 9

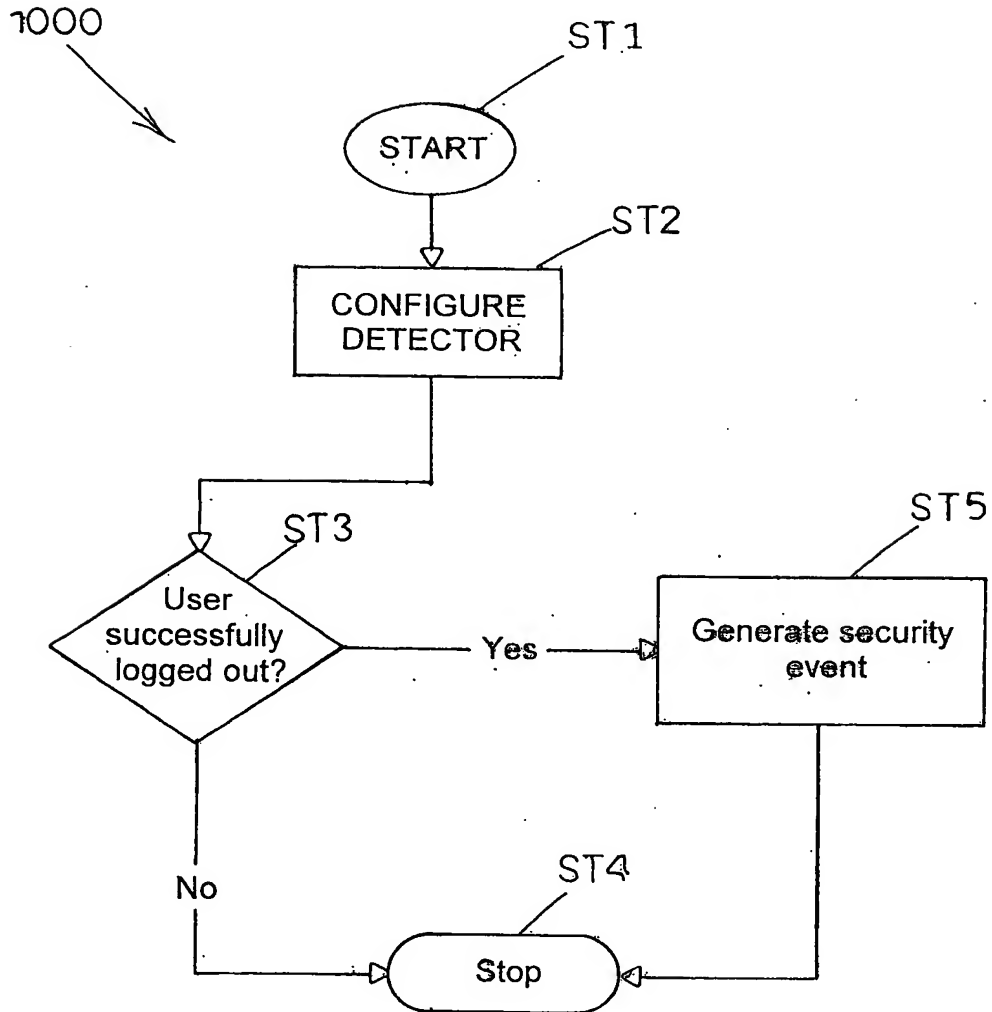


Fig. 10

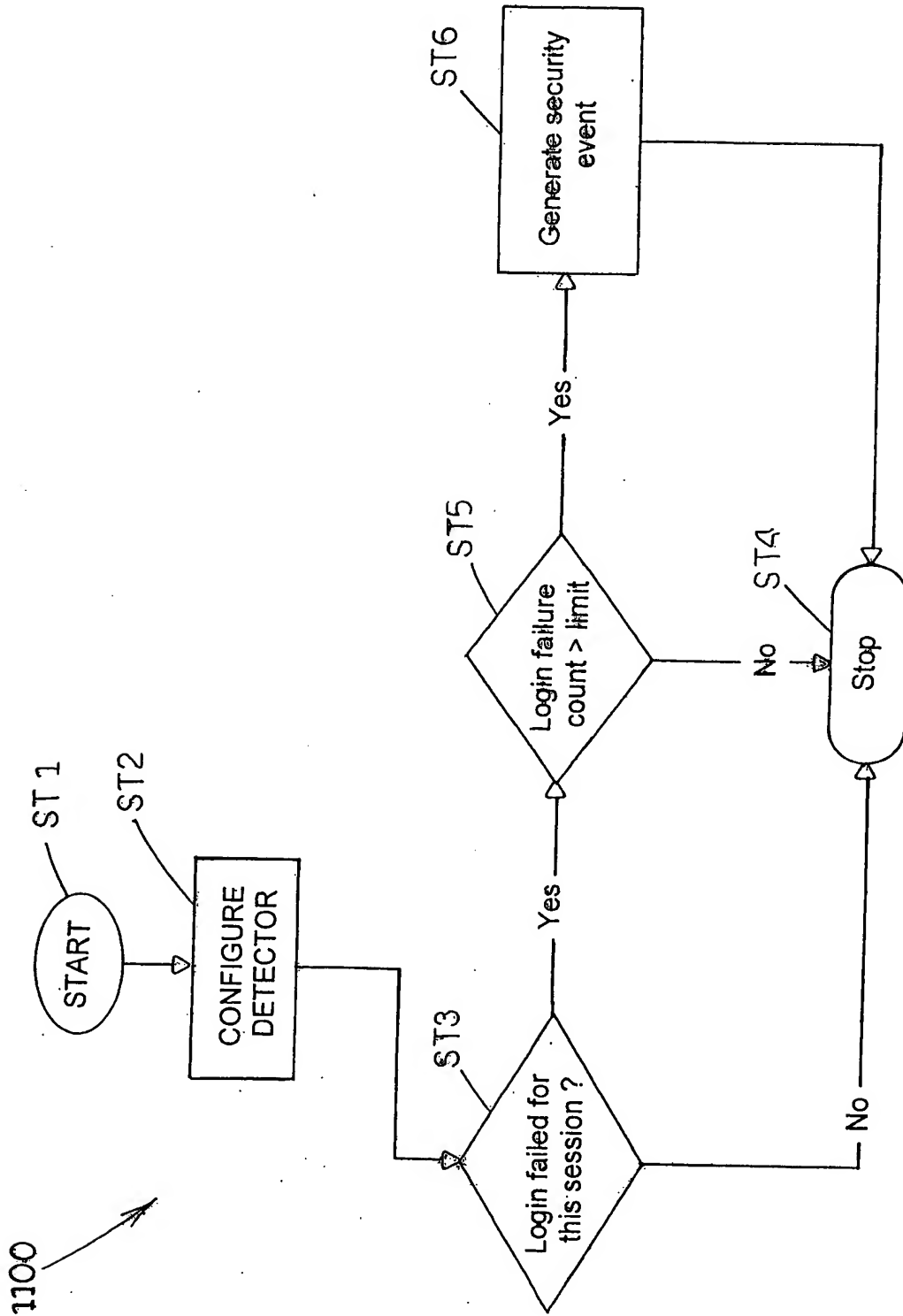


Fig. 11

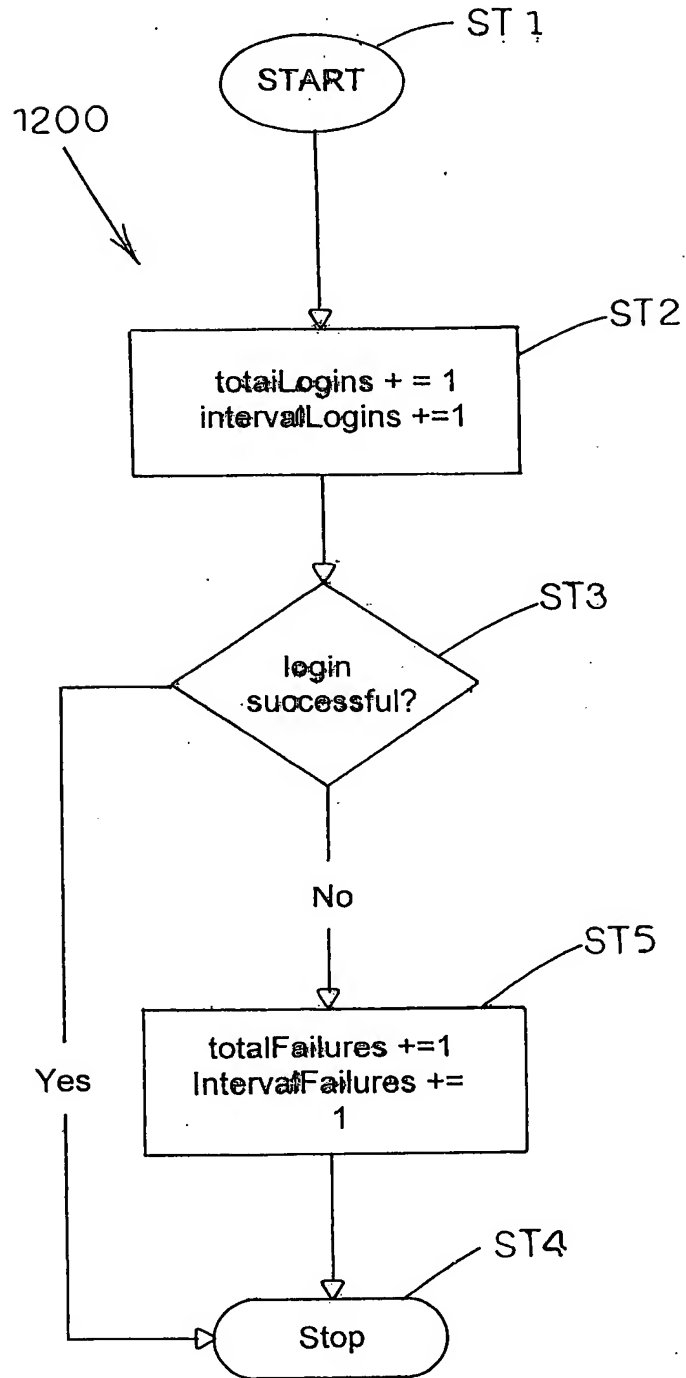


Fig. 12A

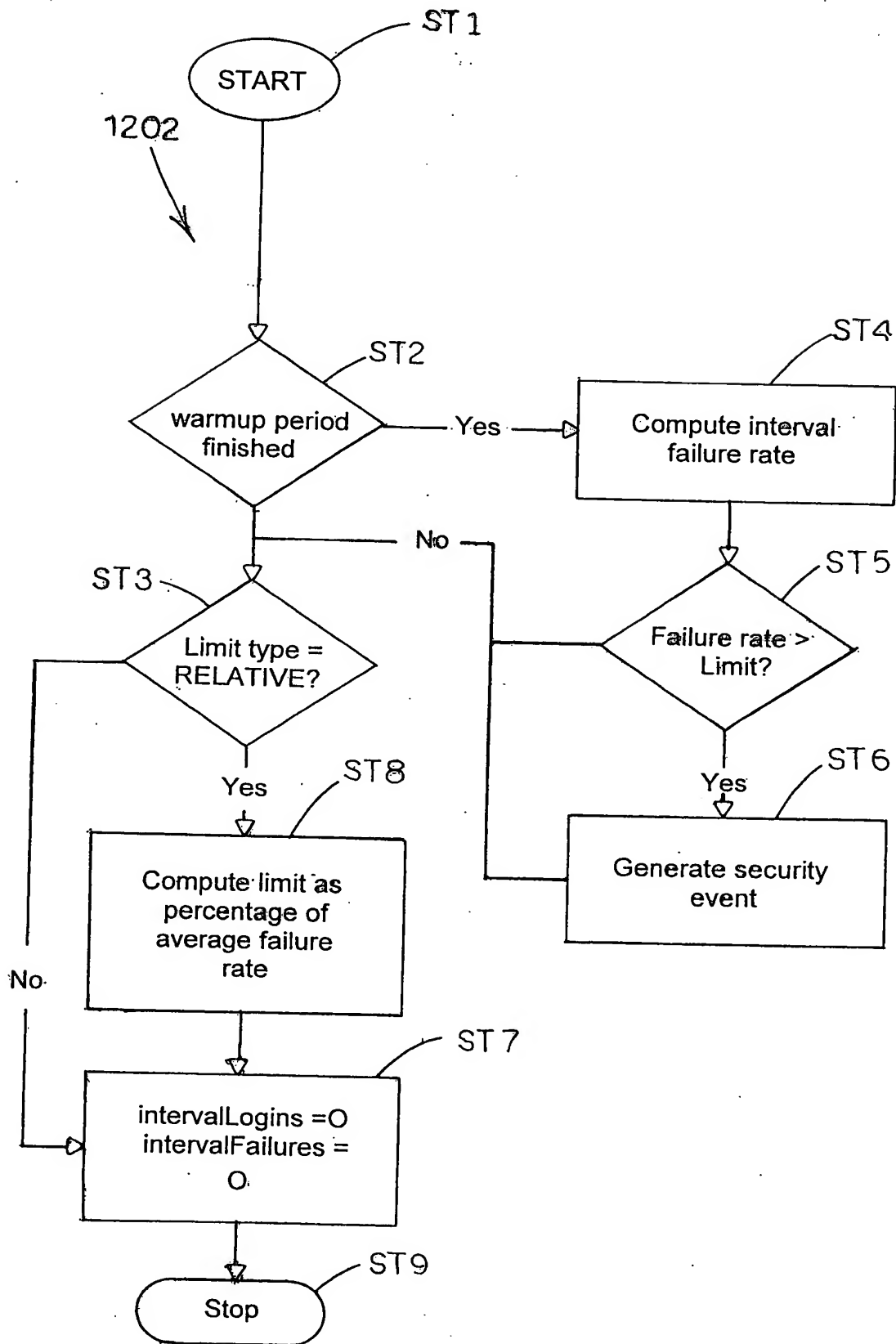


Fig. 12B

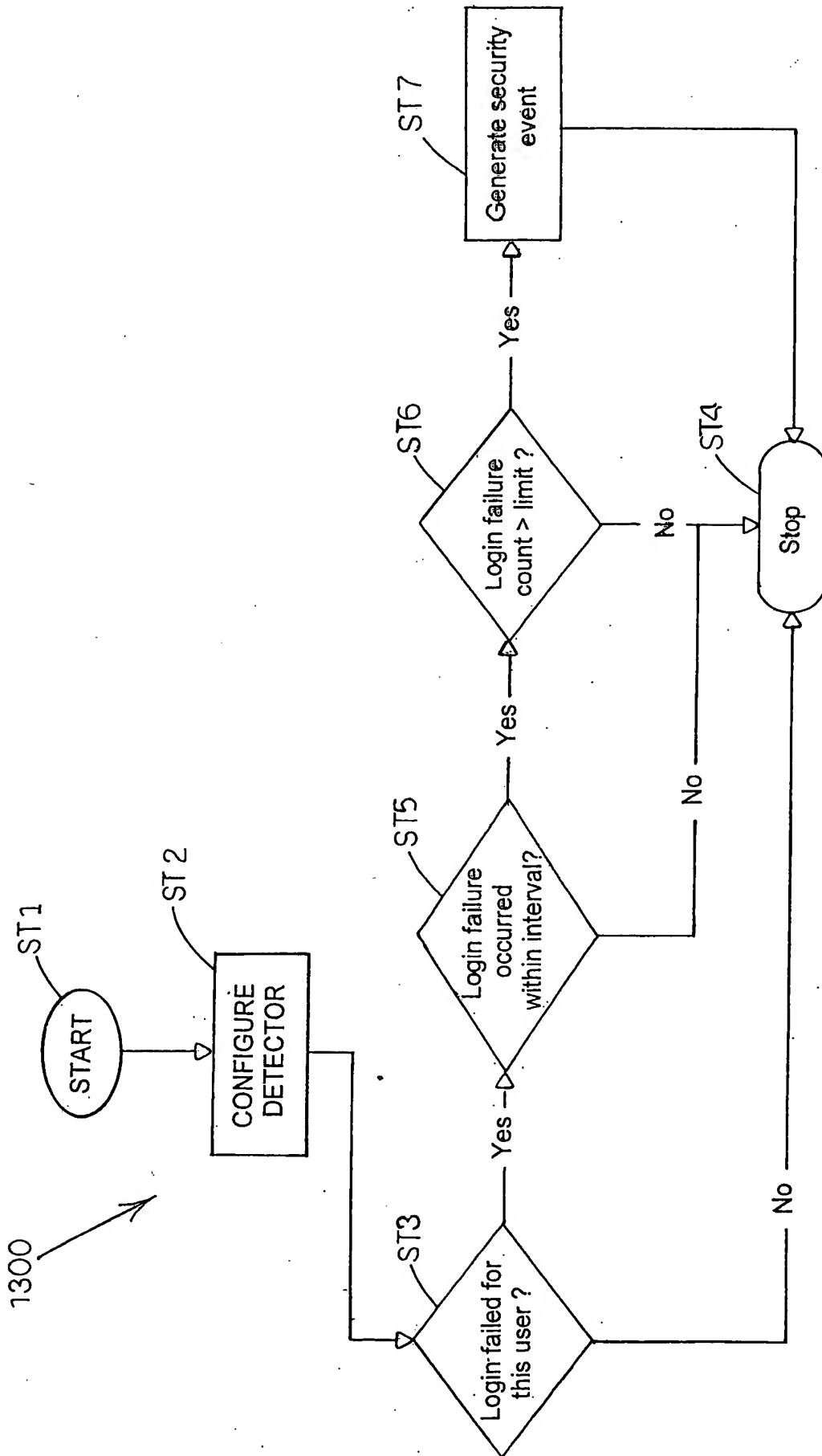


Fig. 13

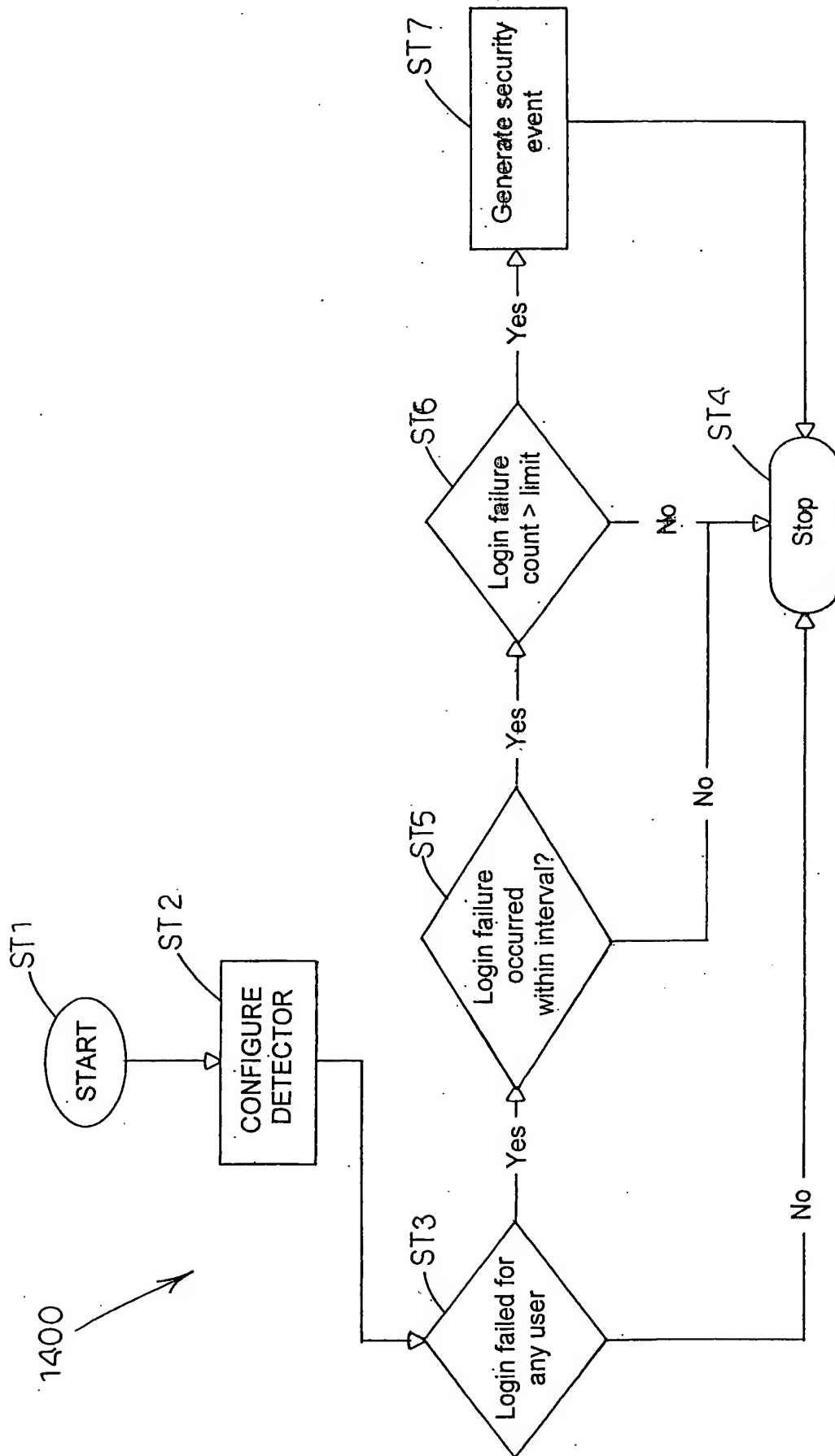
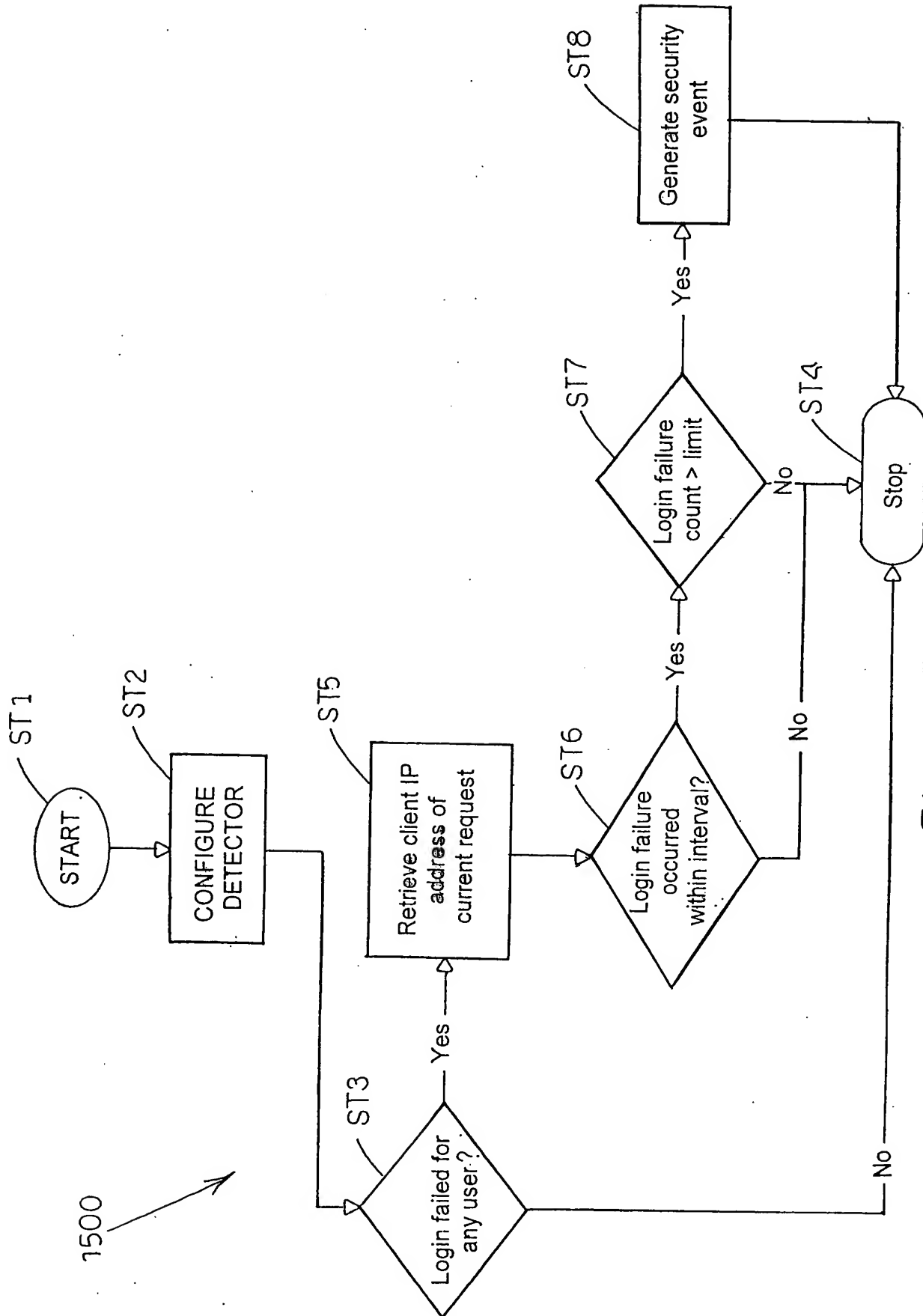
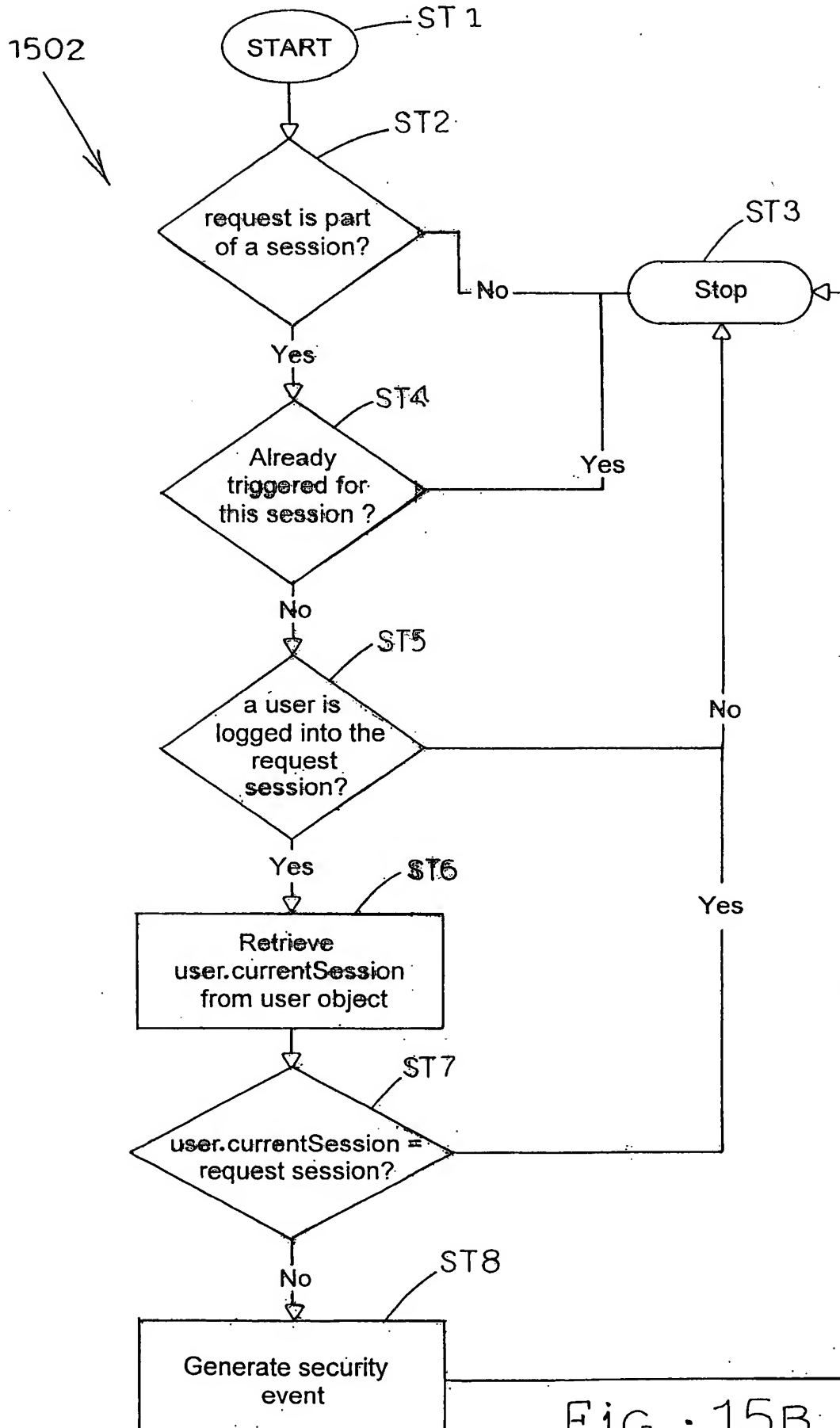


Fig. 14





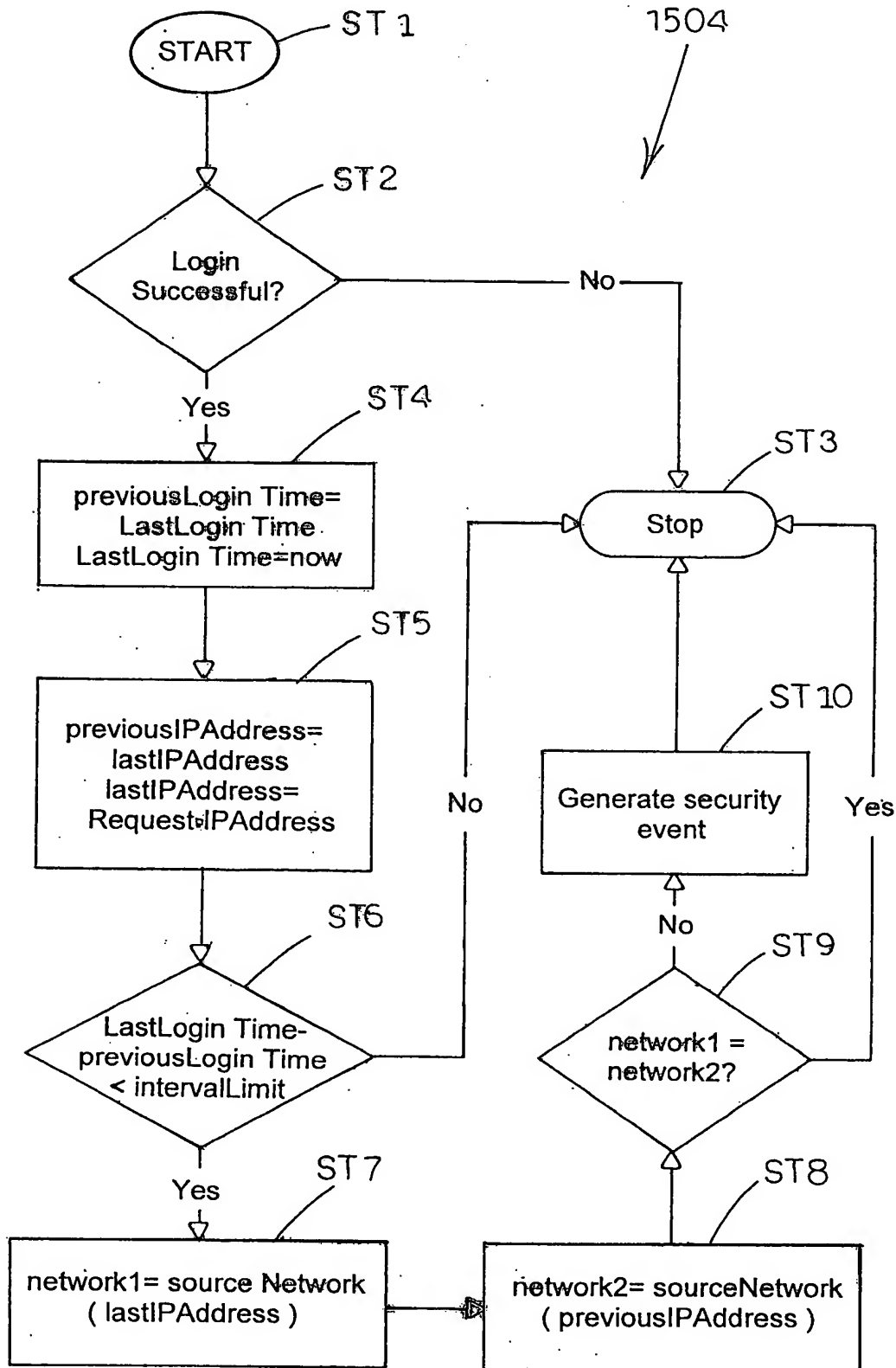


Fig. 15c

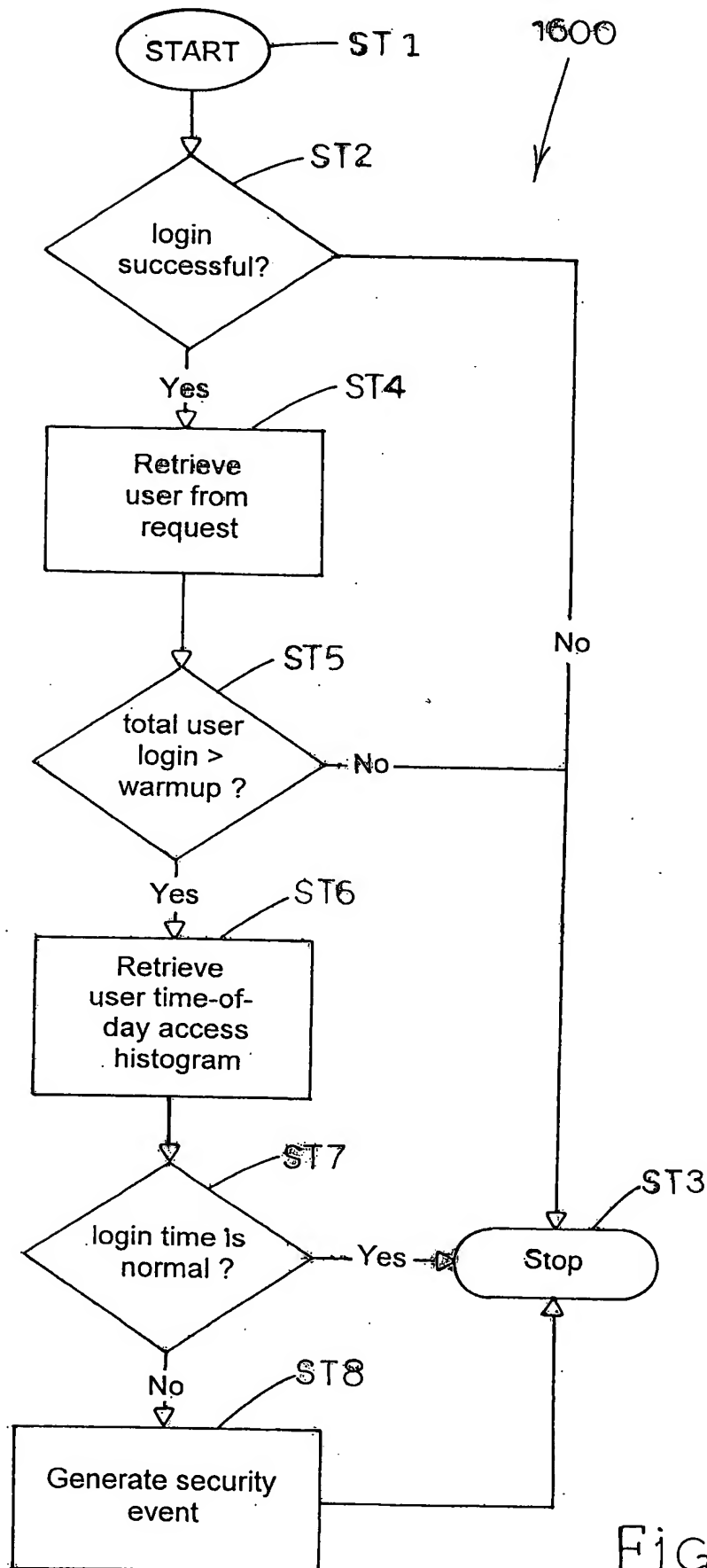


Fig. 16A

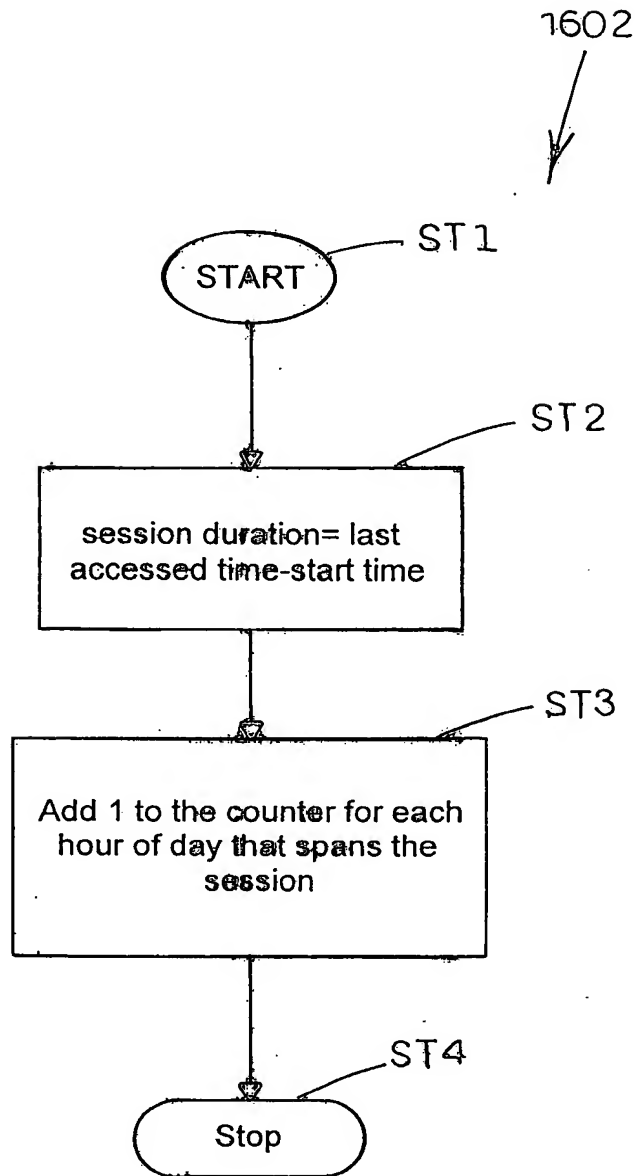


Fig. 16B

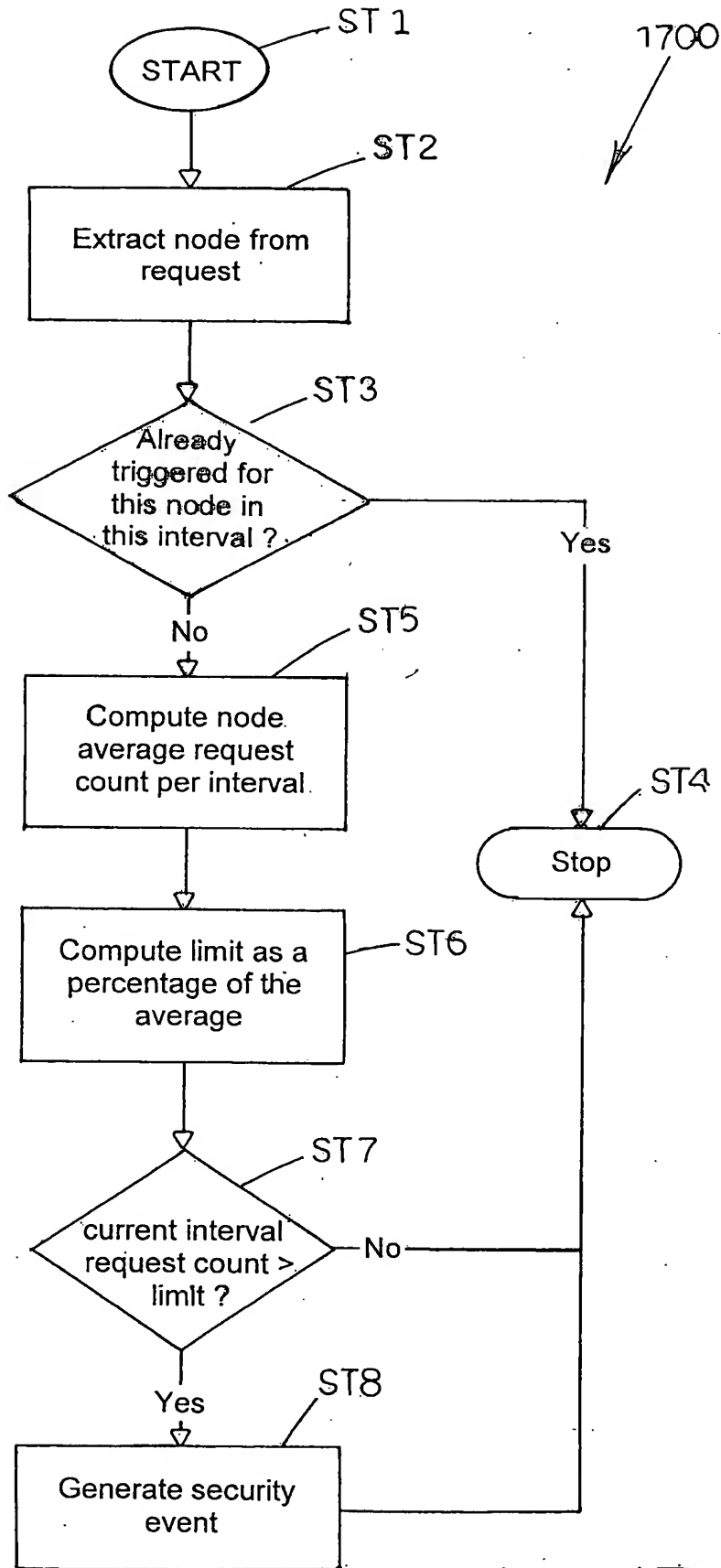


Fig. 17A

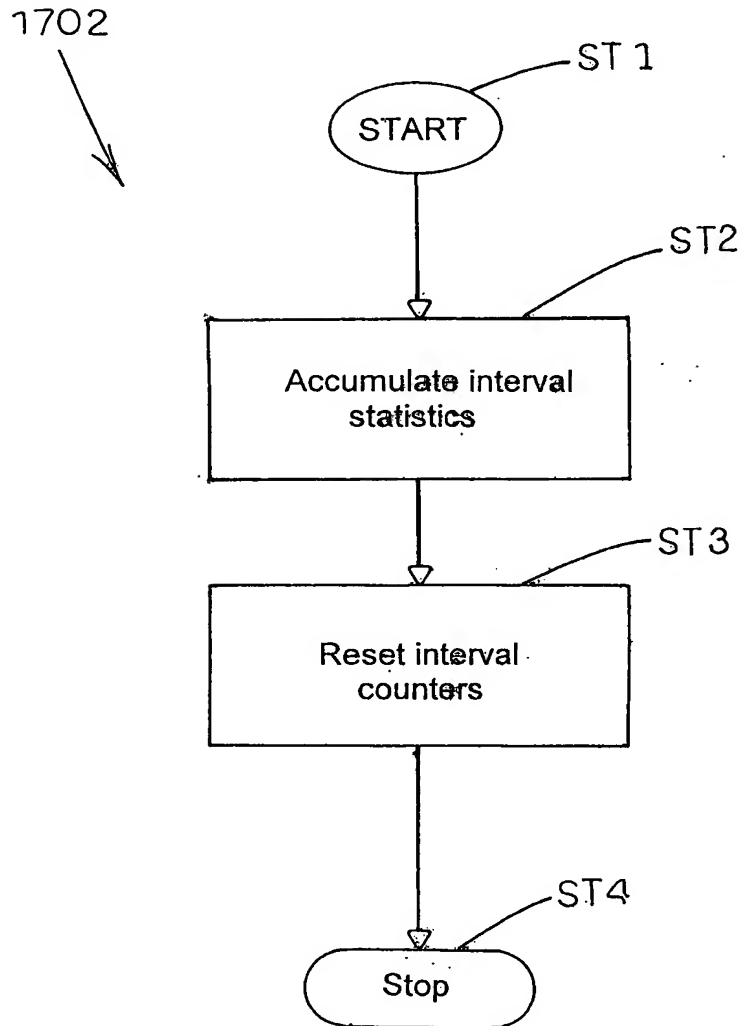


FIG. 17B

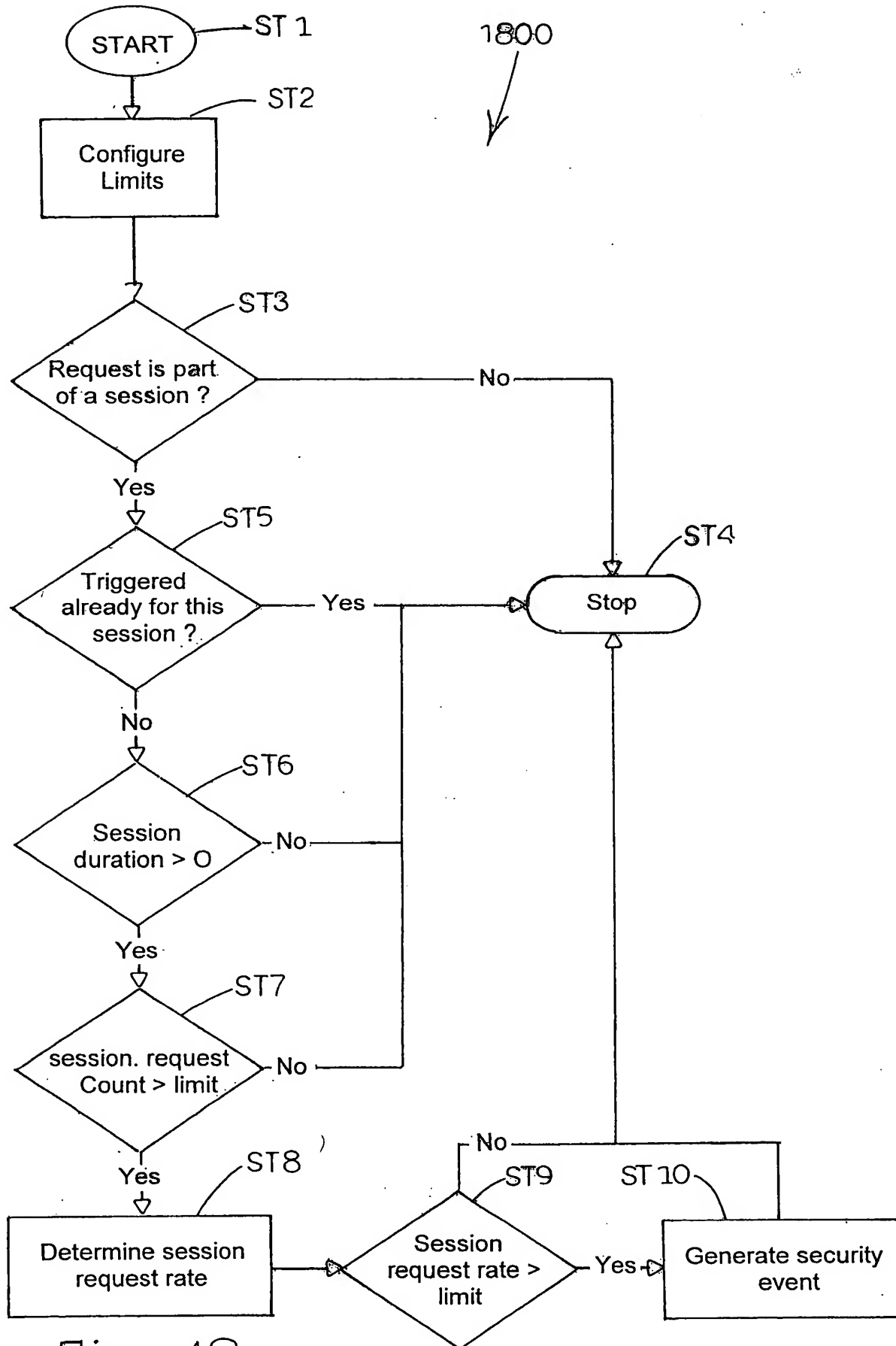


Fig. 18

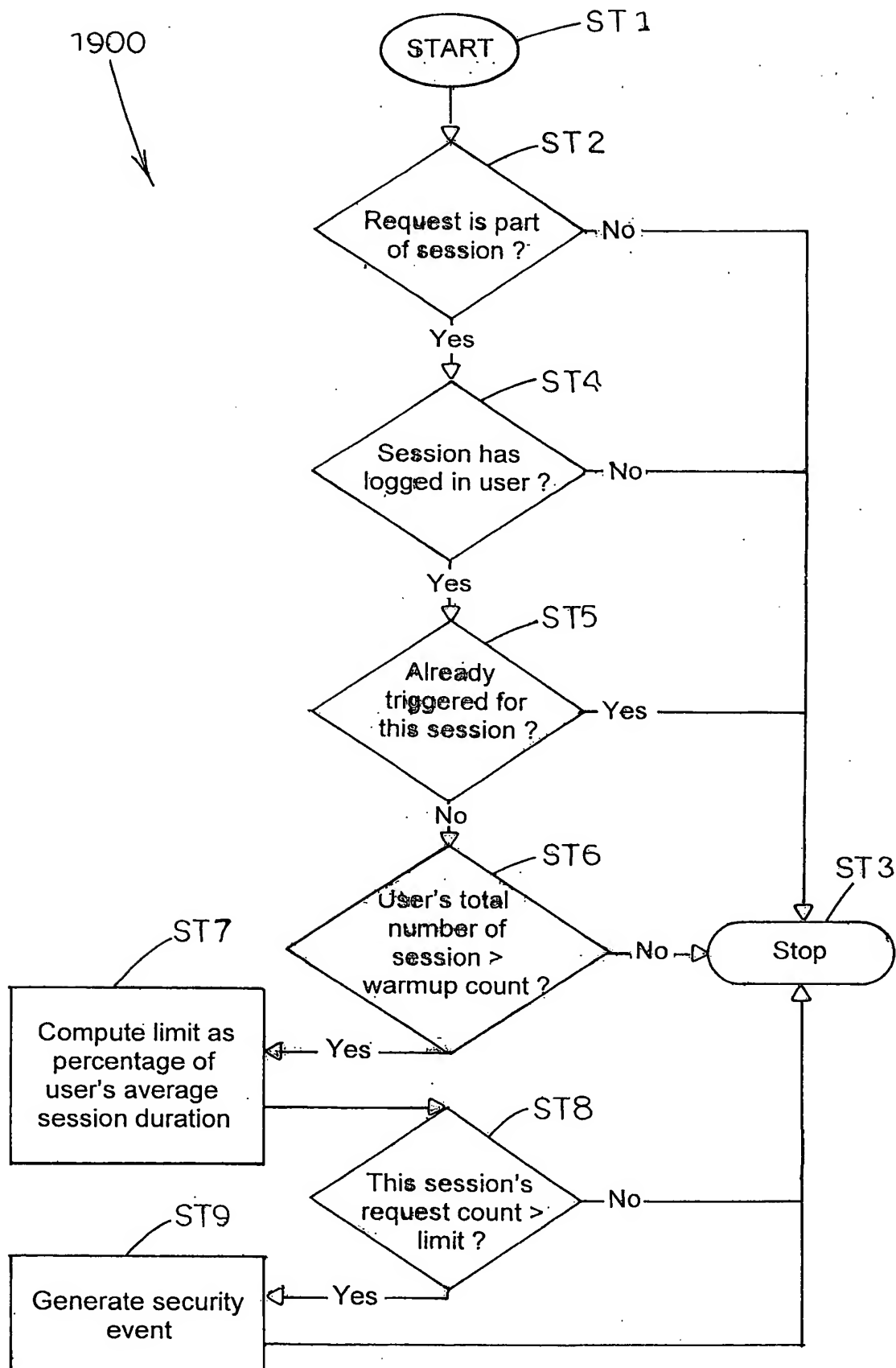


Fig. 19A

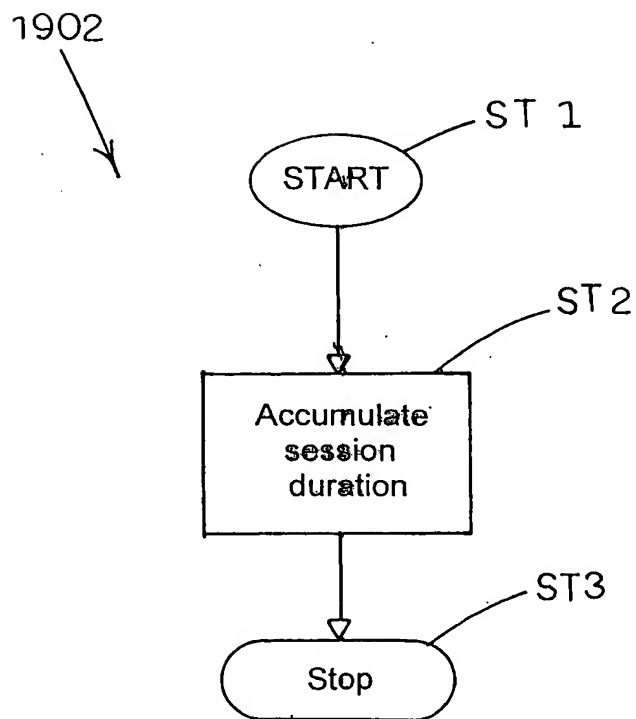


Fig. 19B

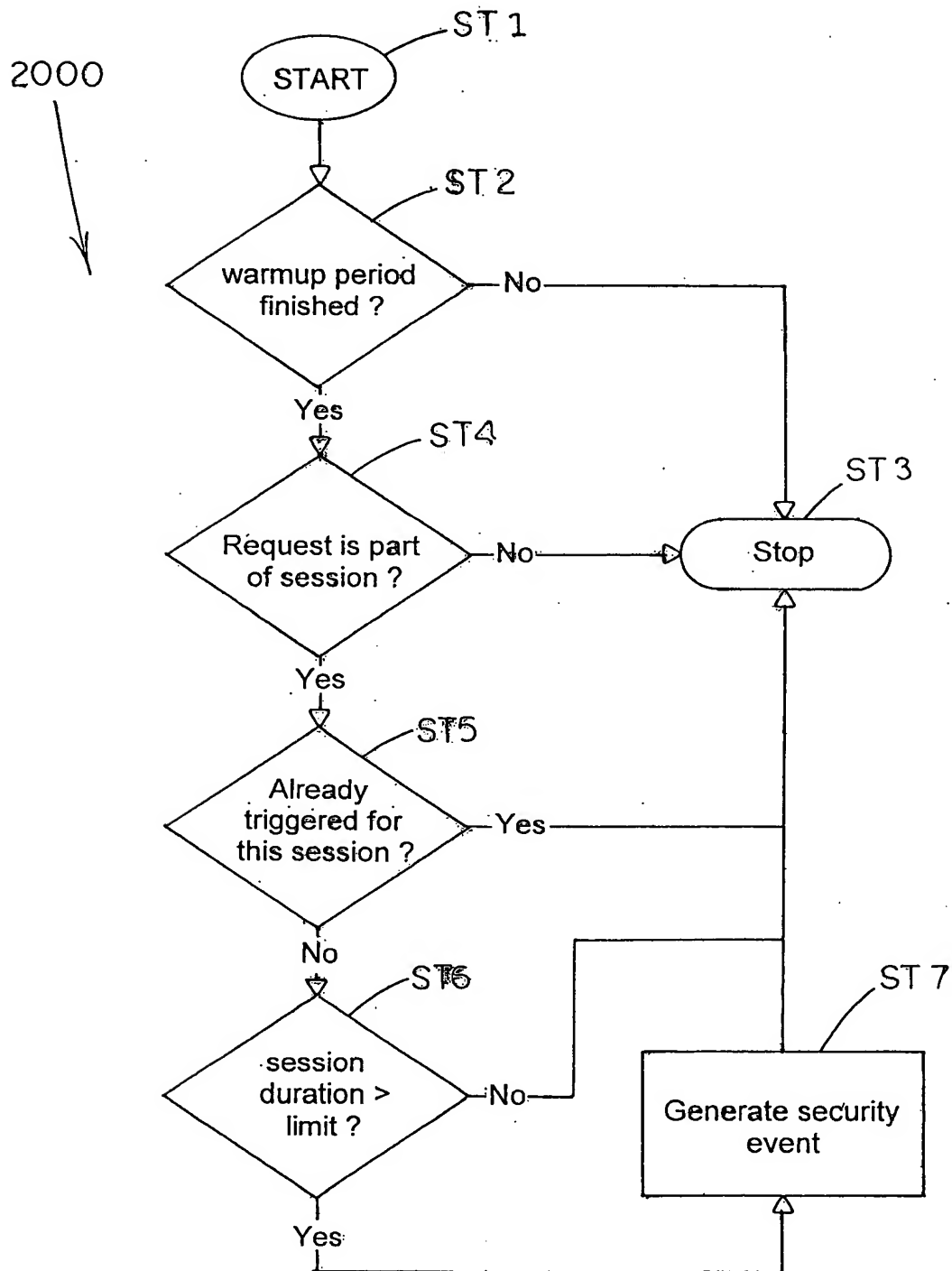


Fig. 20A

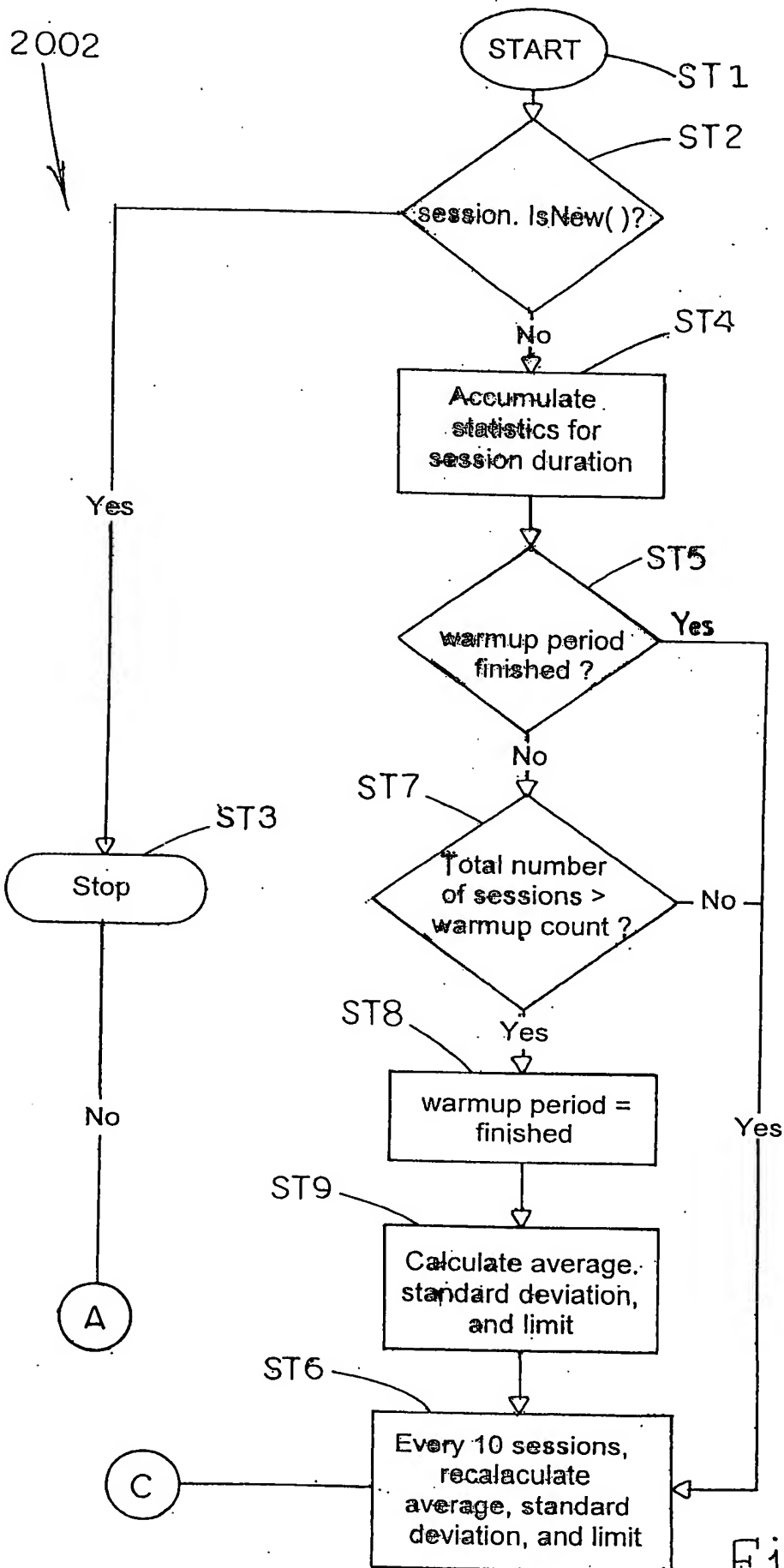


Fig. 20B

2004

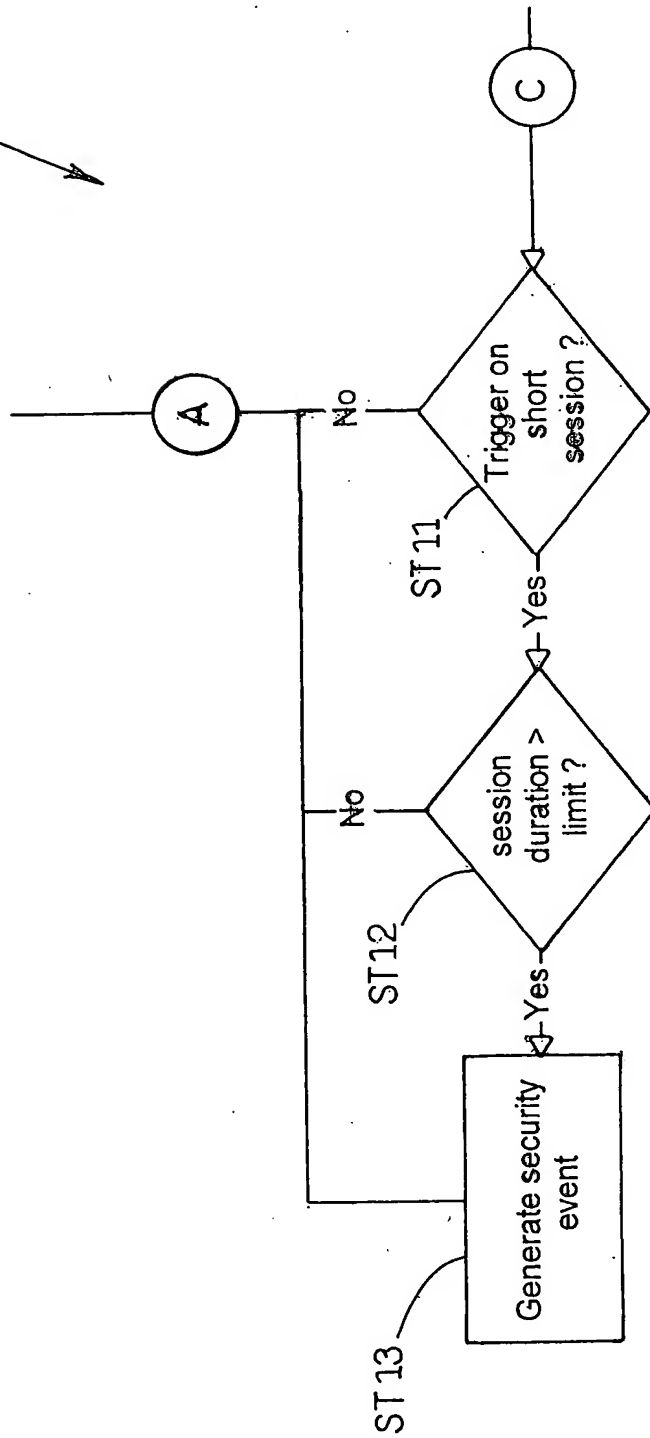


Fig. 20C

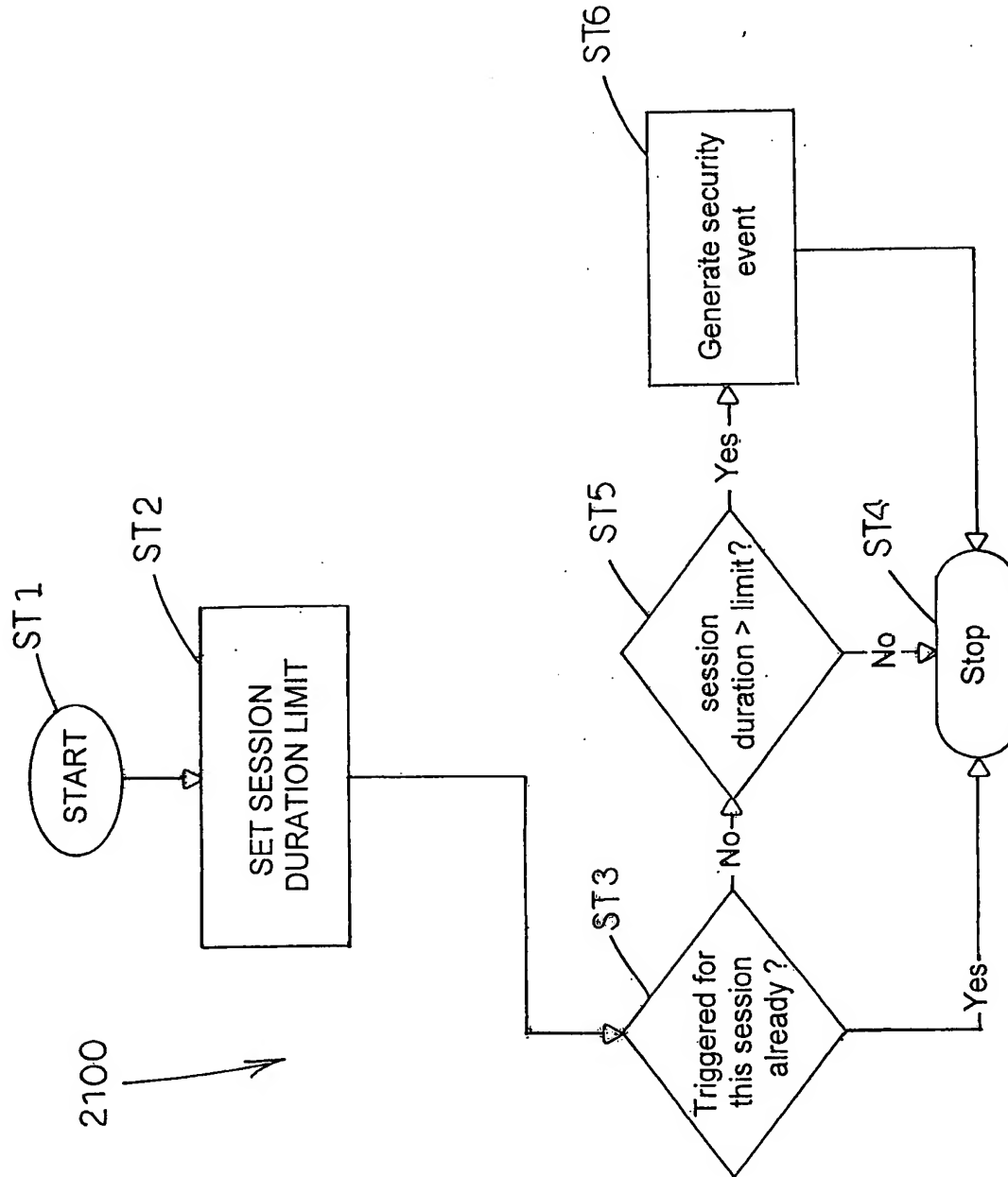


Fig. 21

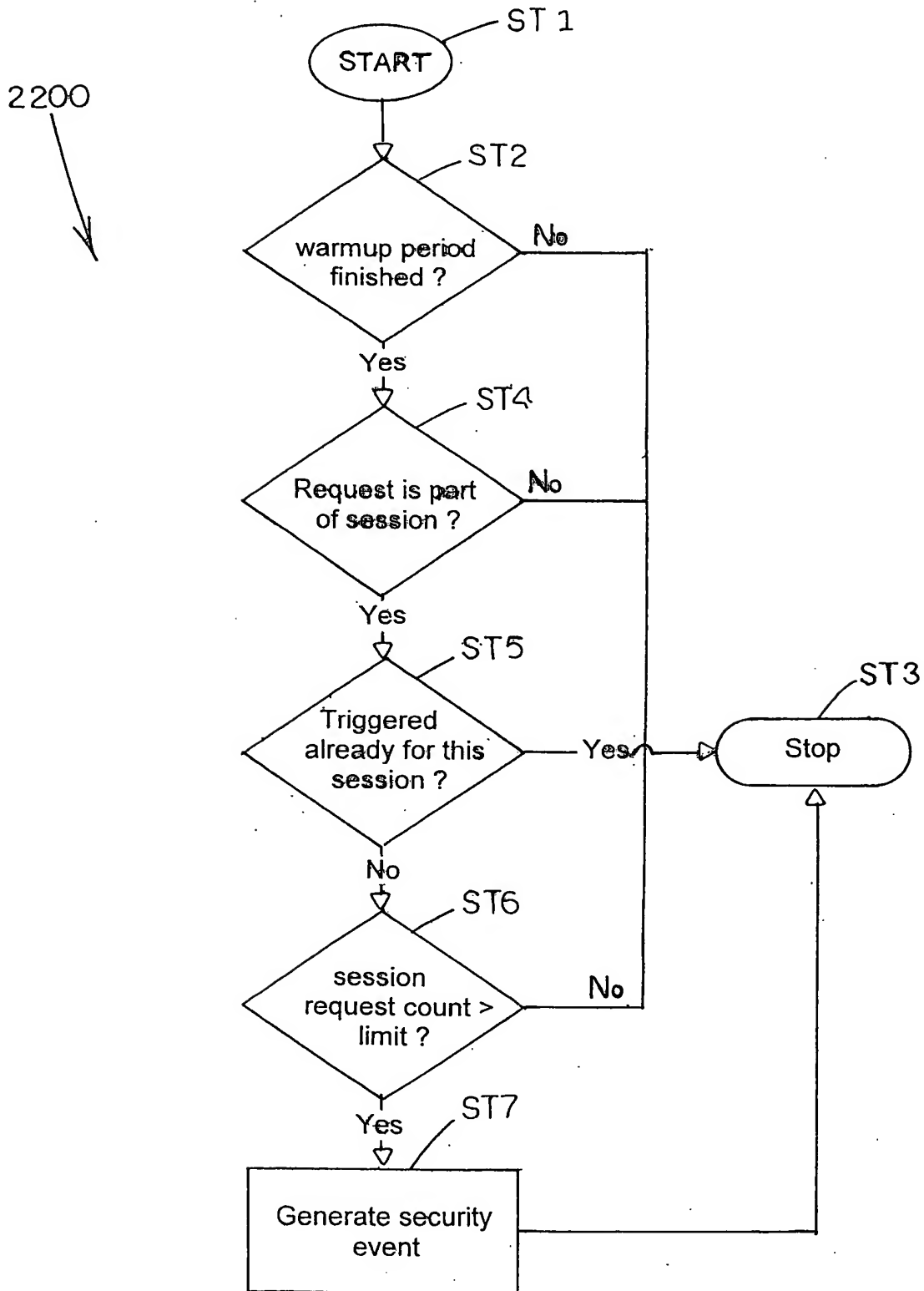


Fig. 22A

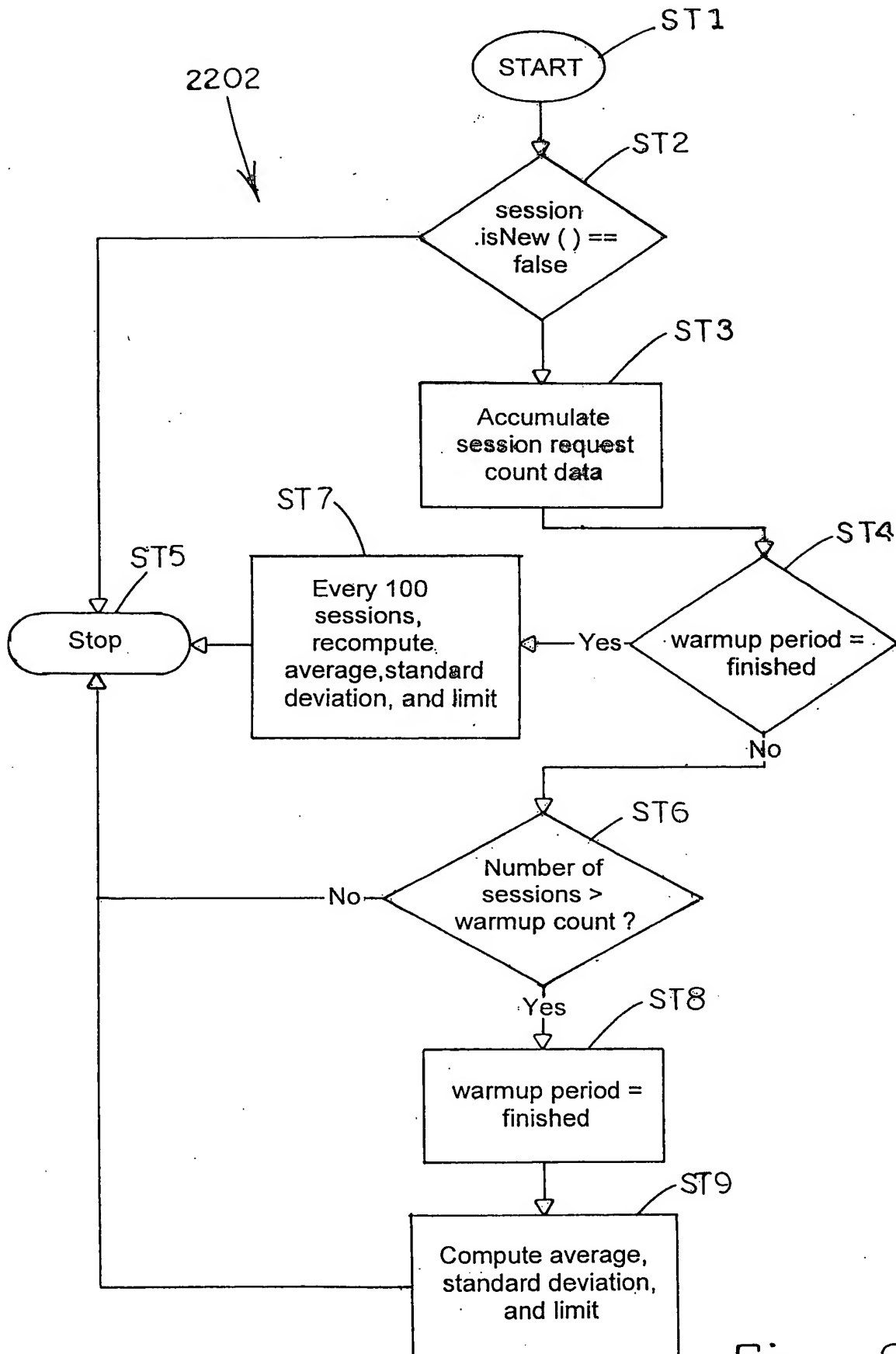
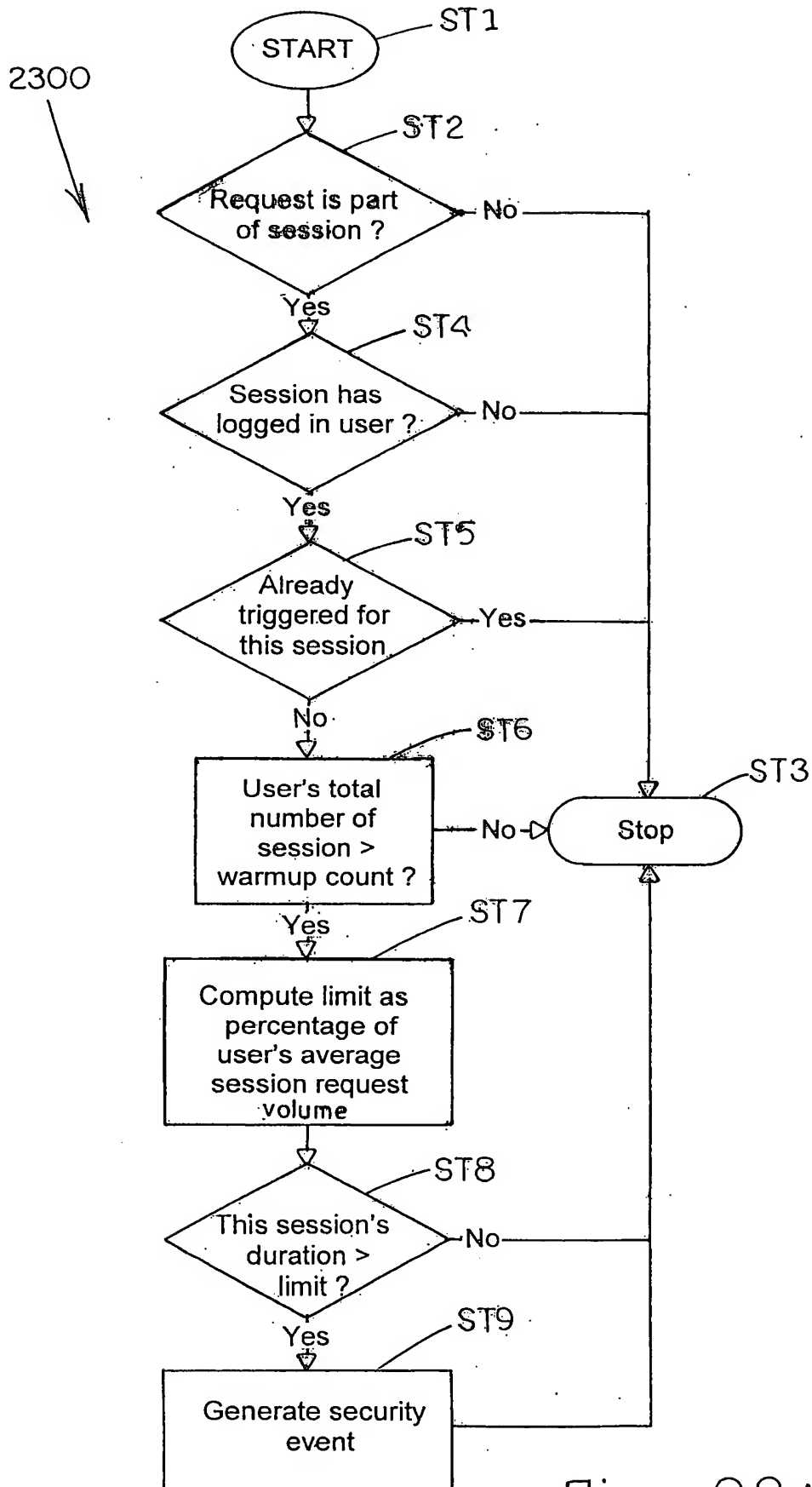


Fig. 22B



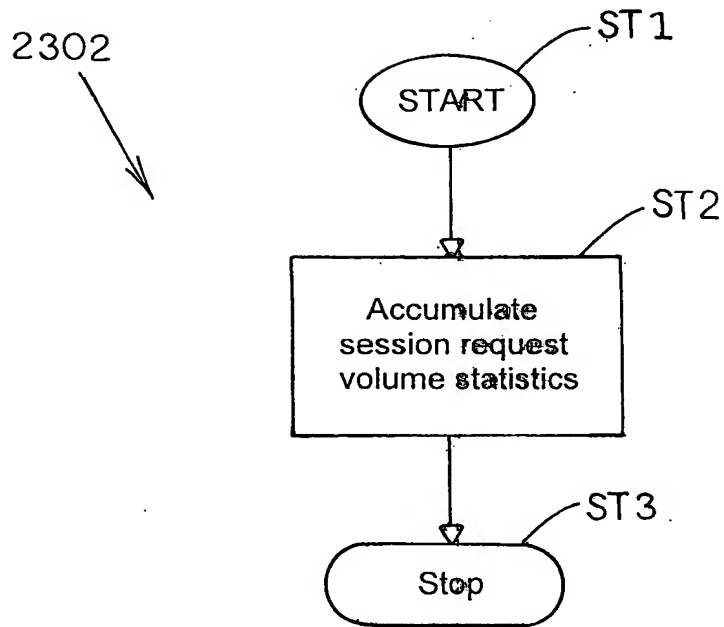


FIG. 23B

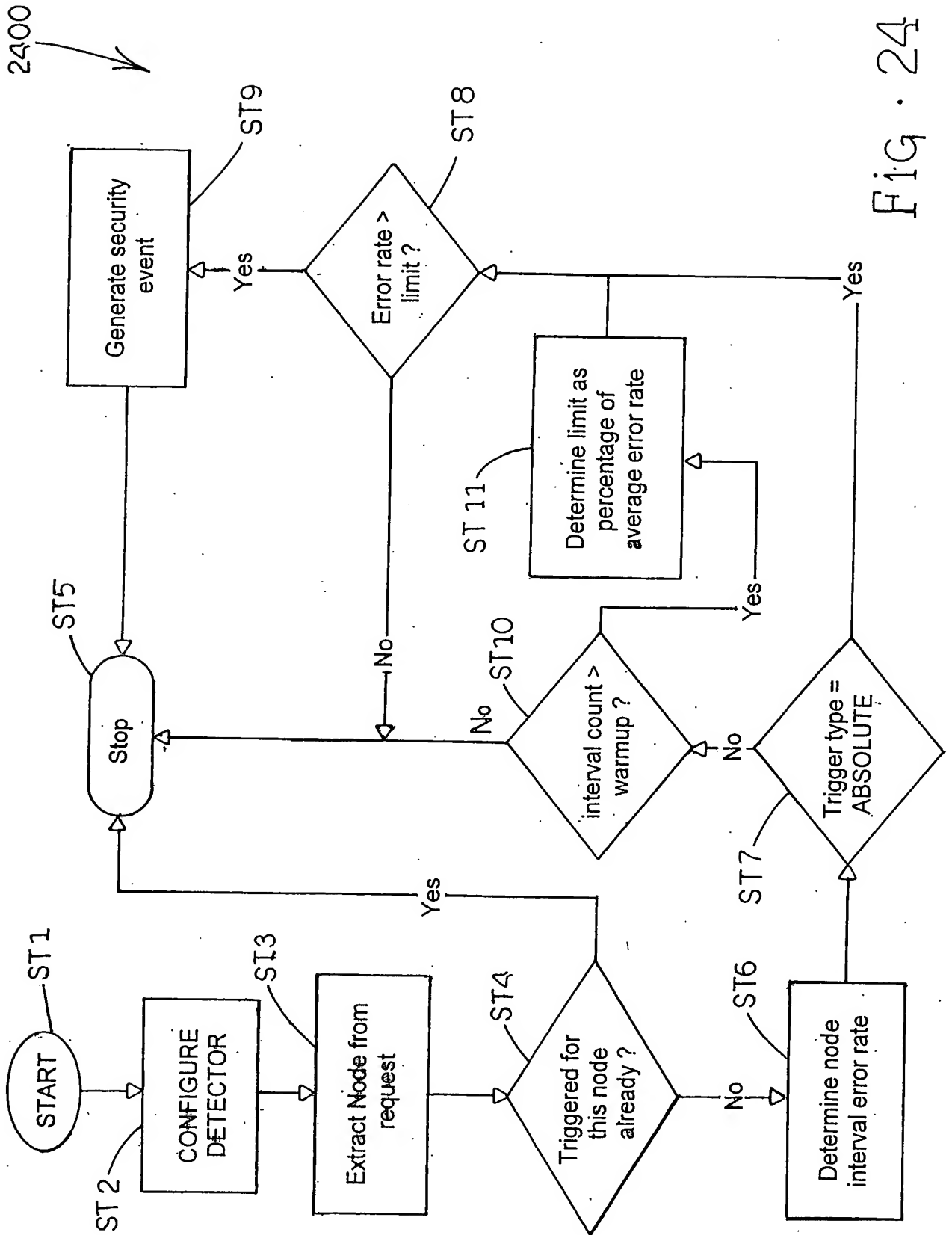


Fig. 24

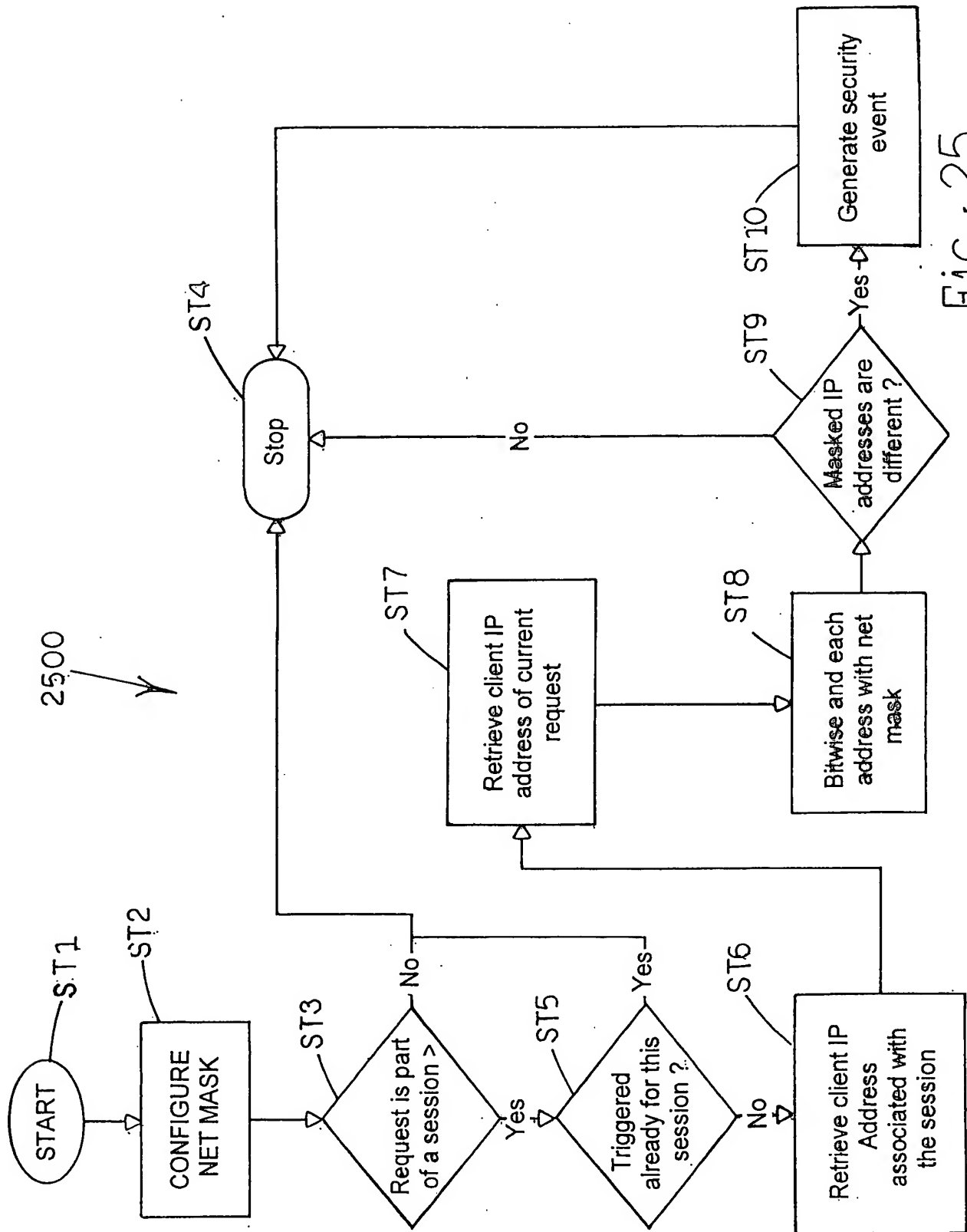


Fig. 25

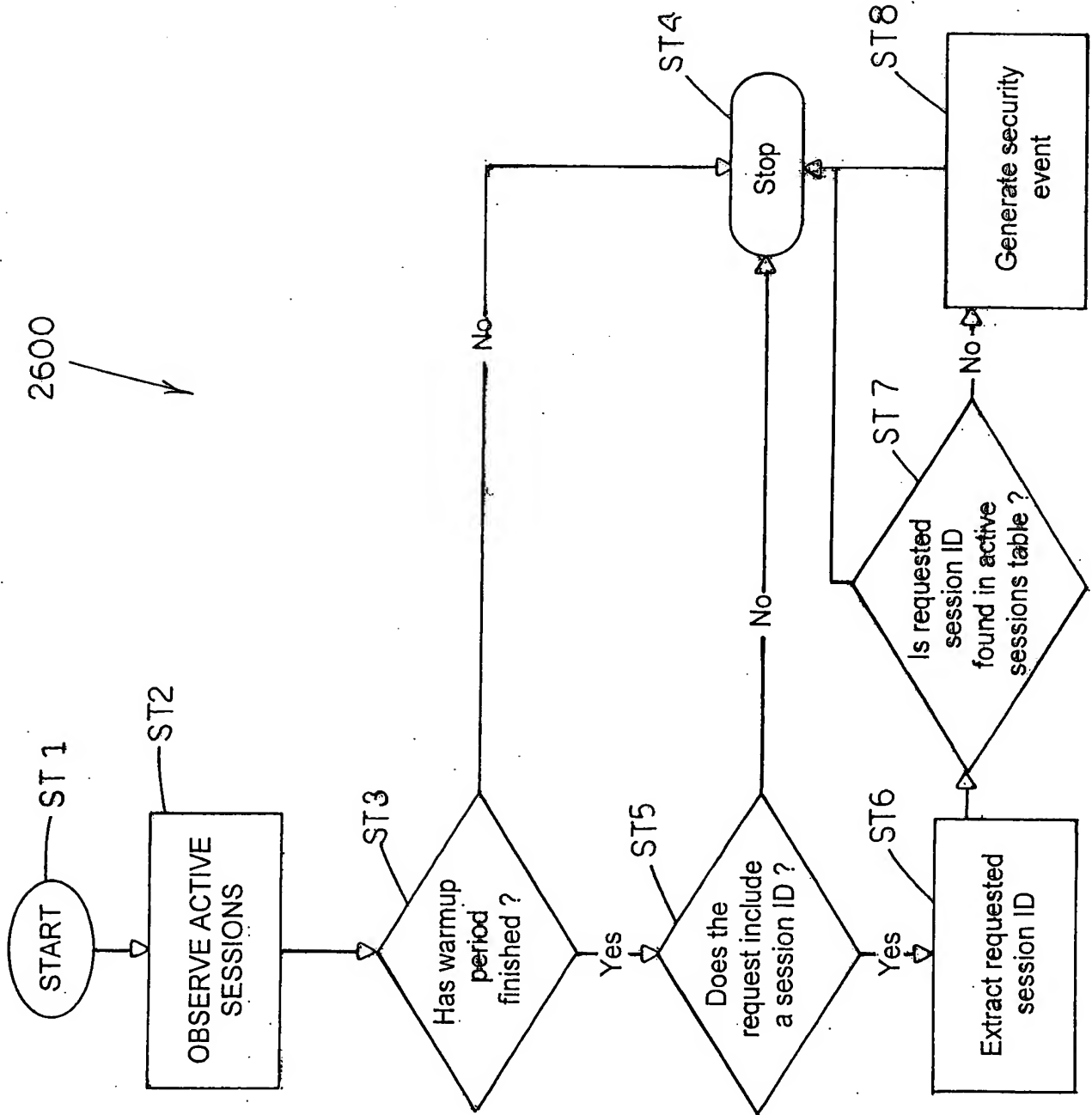


Fig. 26

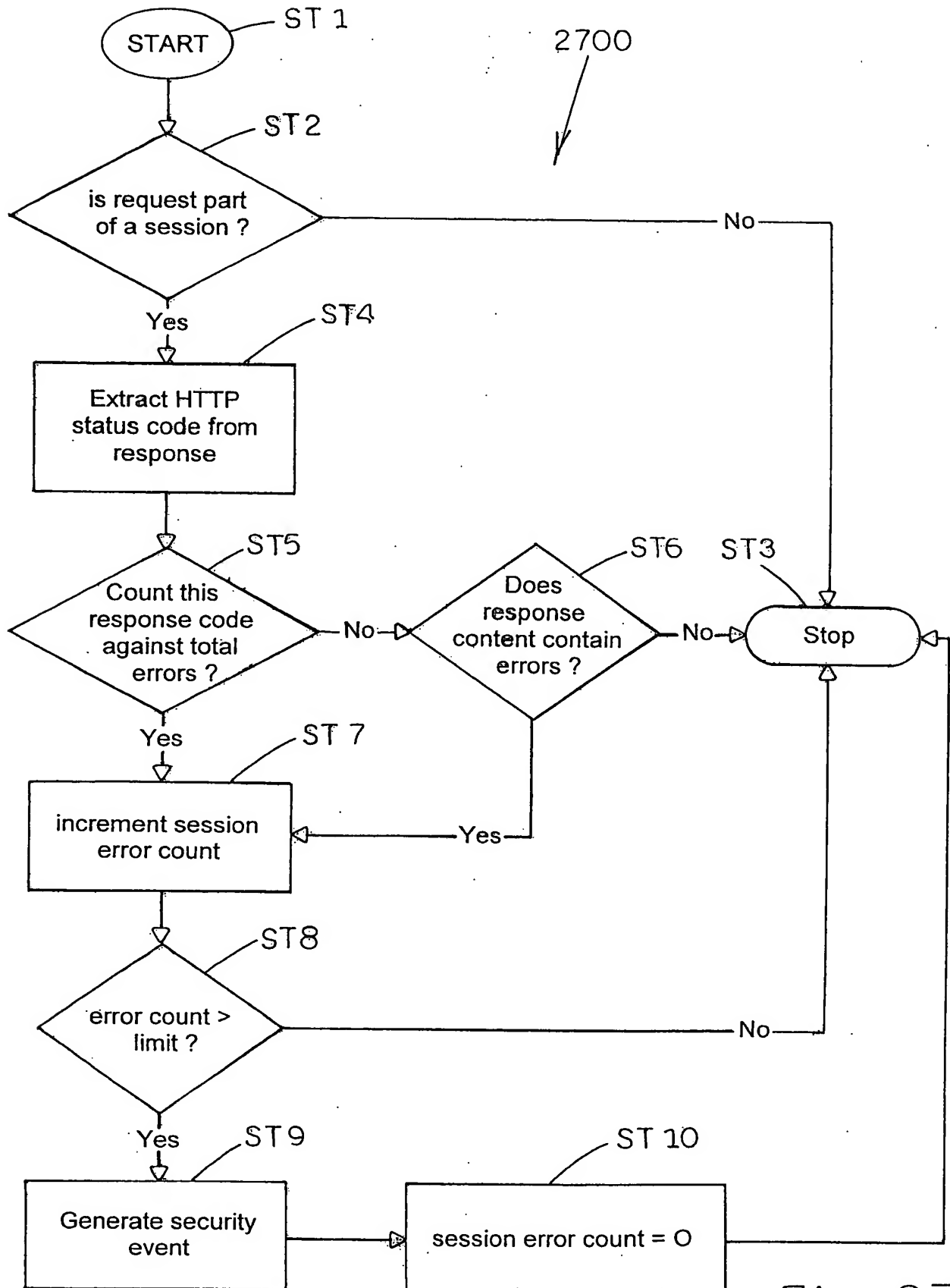
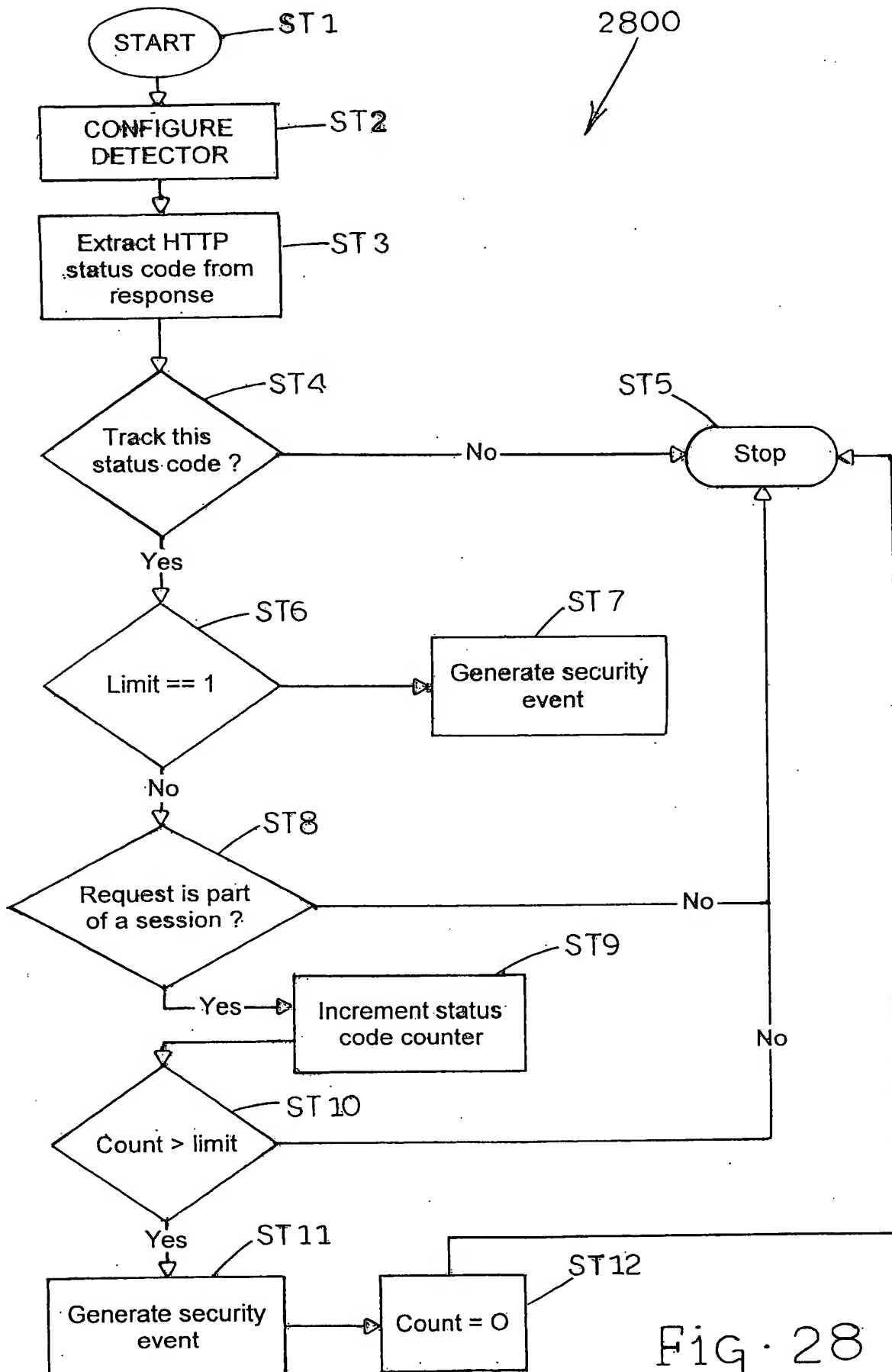


Fig. 27



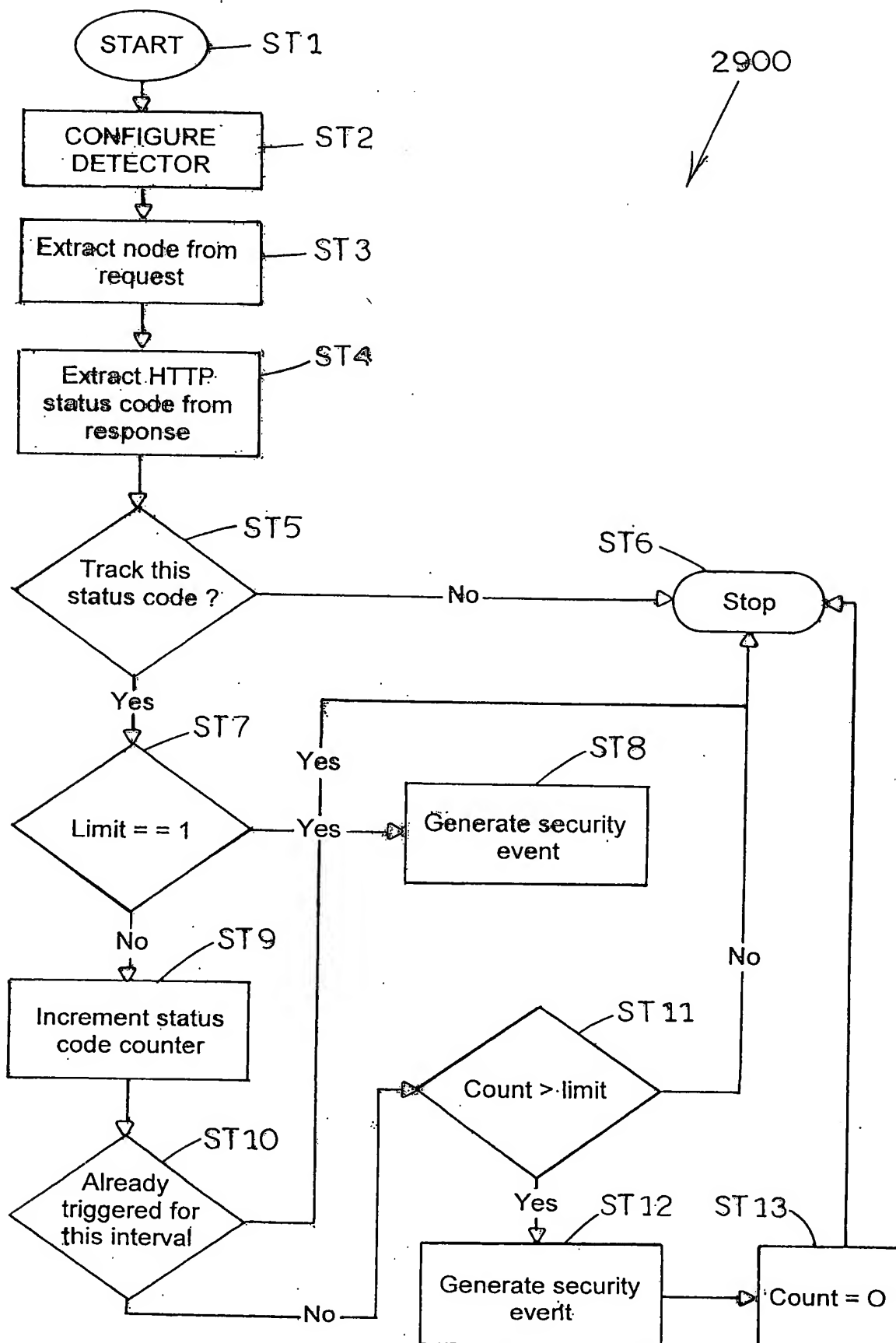


Fig. 29

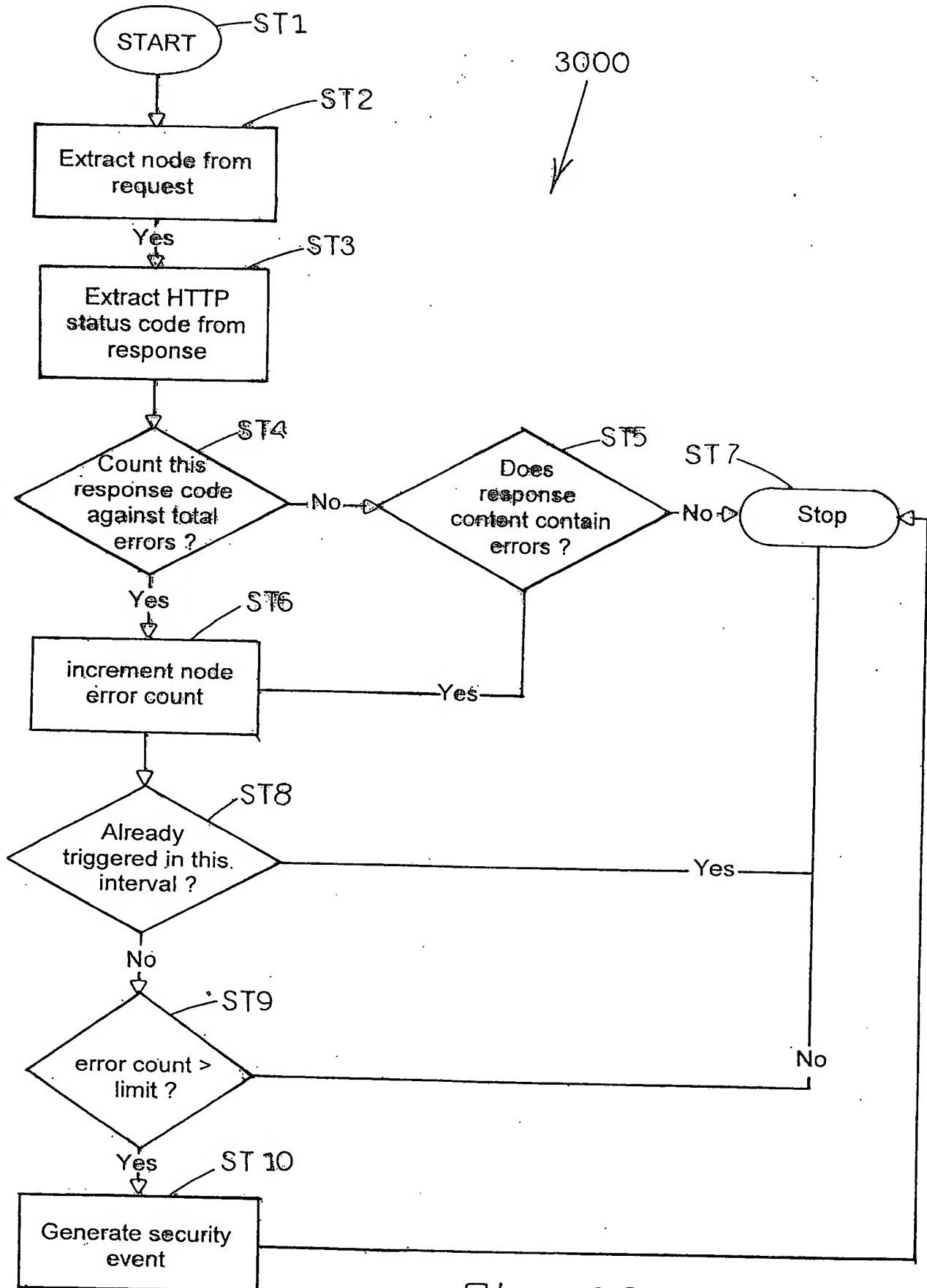


Fig. 30

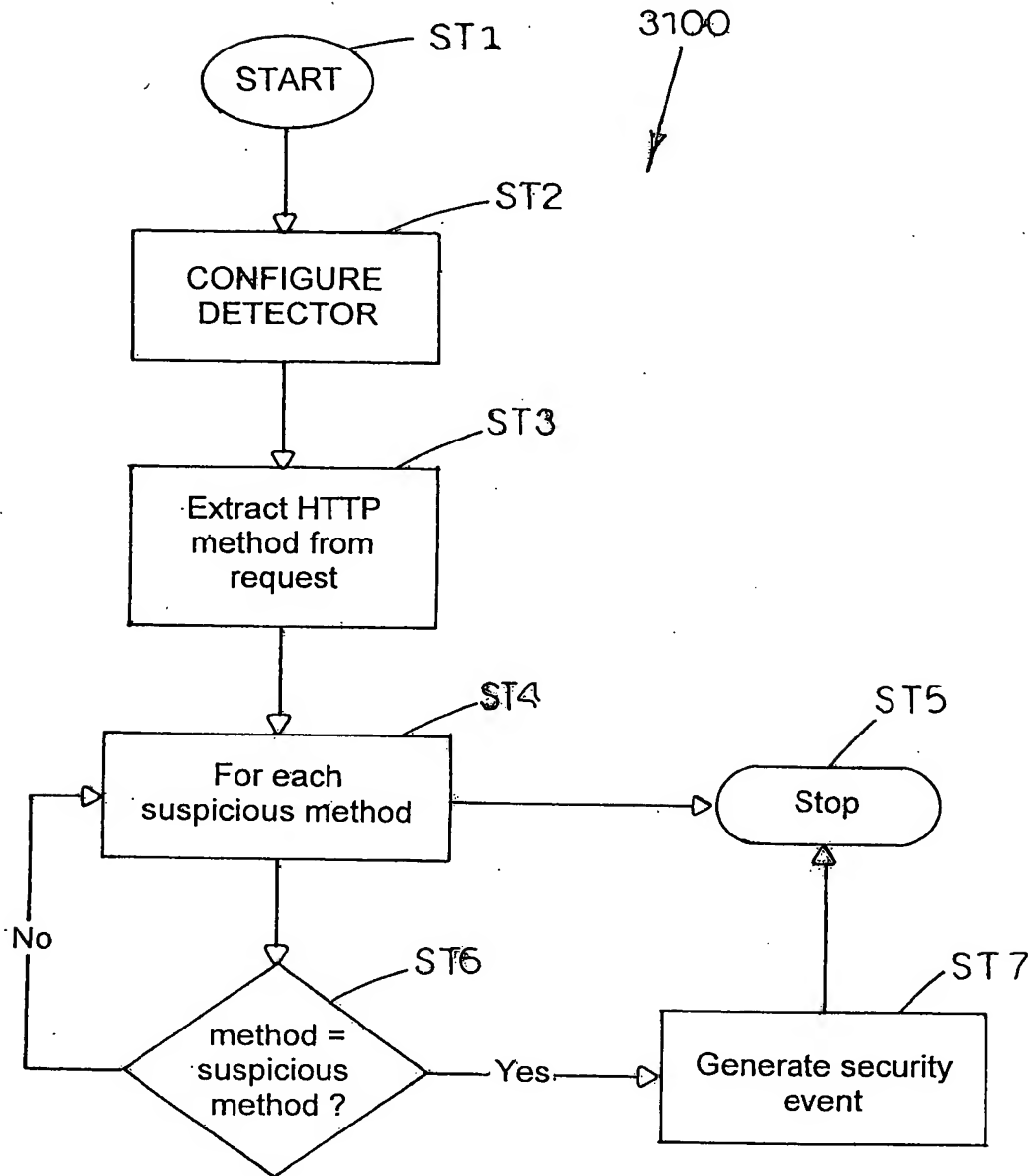


Fig. 31

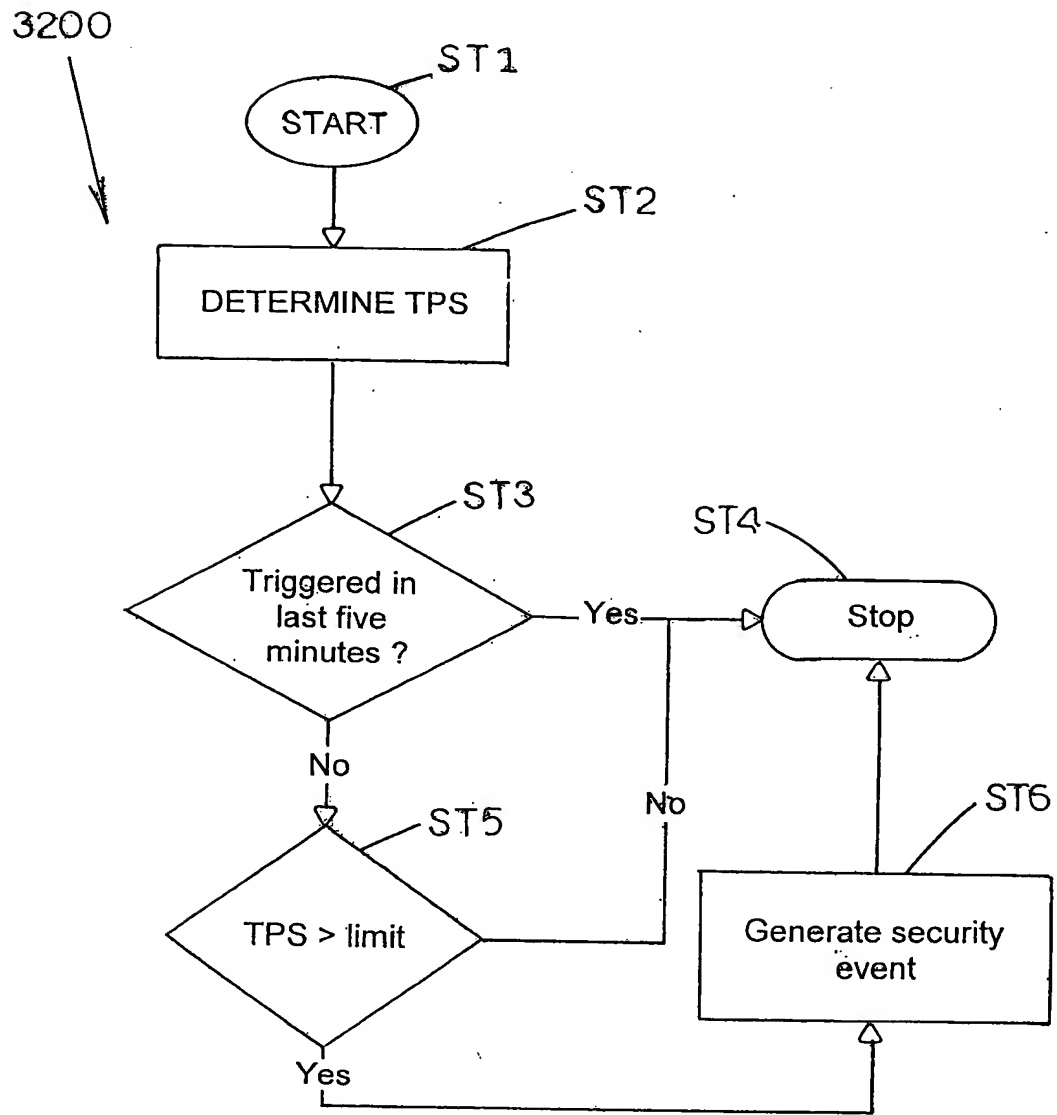


Fig. 32

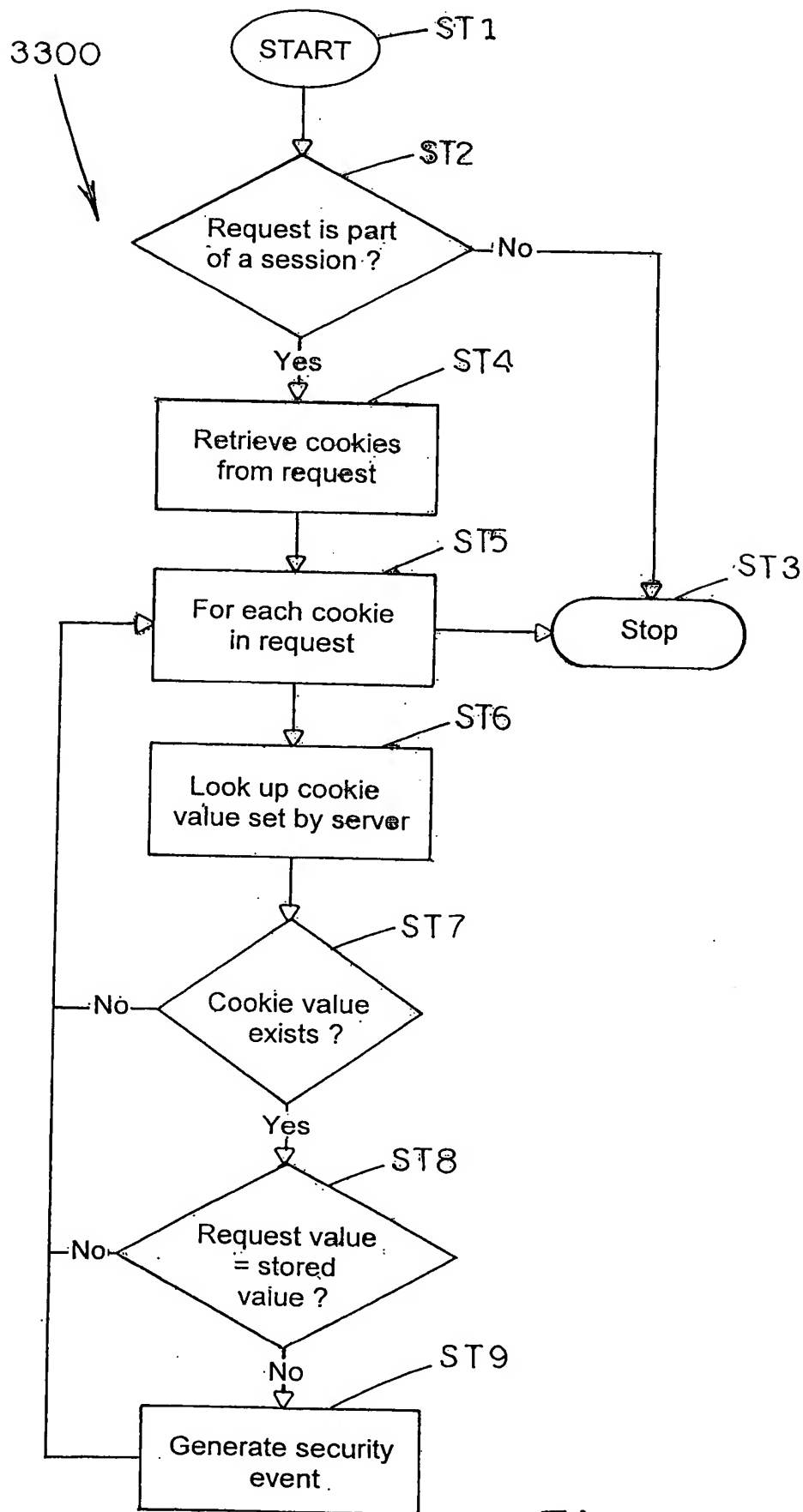


Fig. 33A

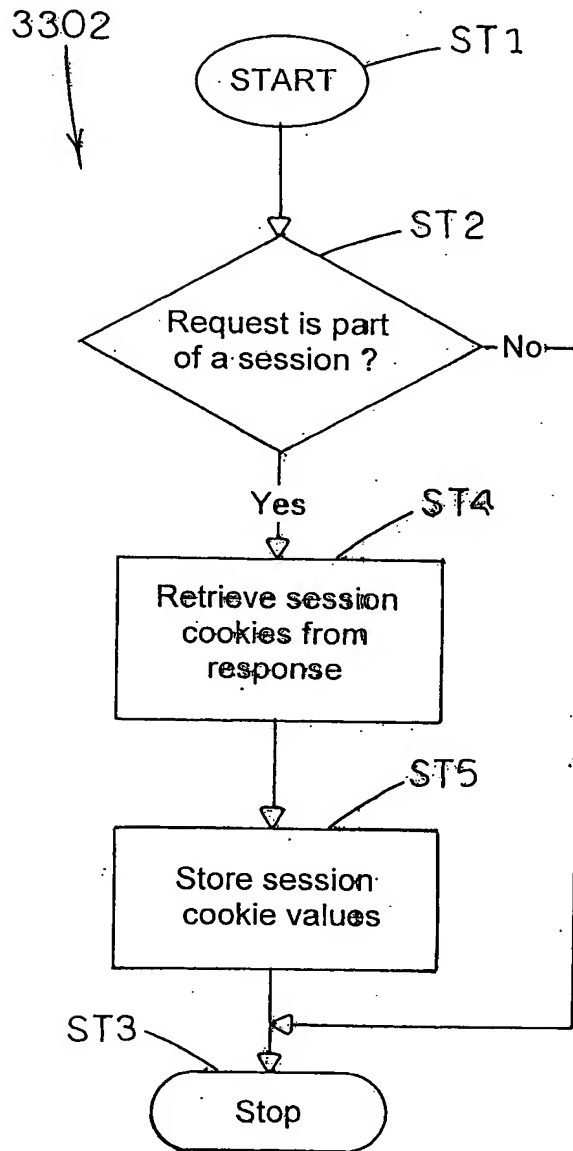


FIG. 33B

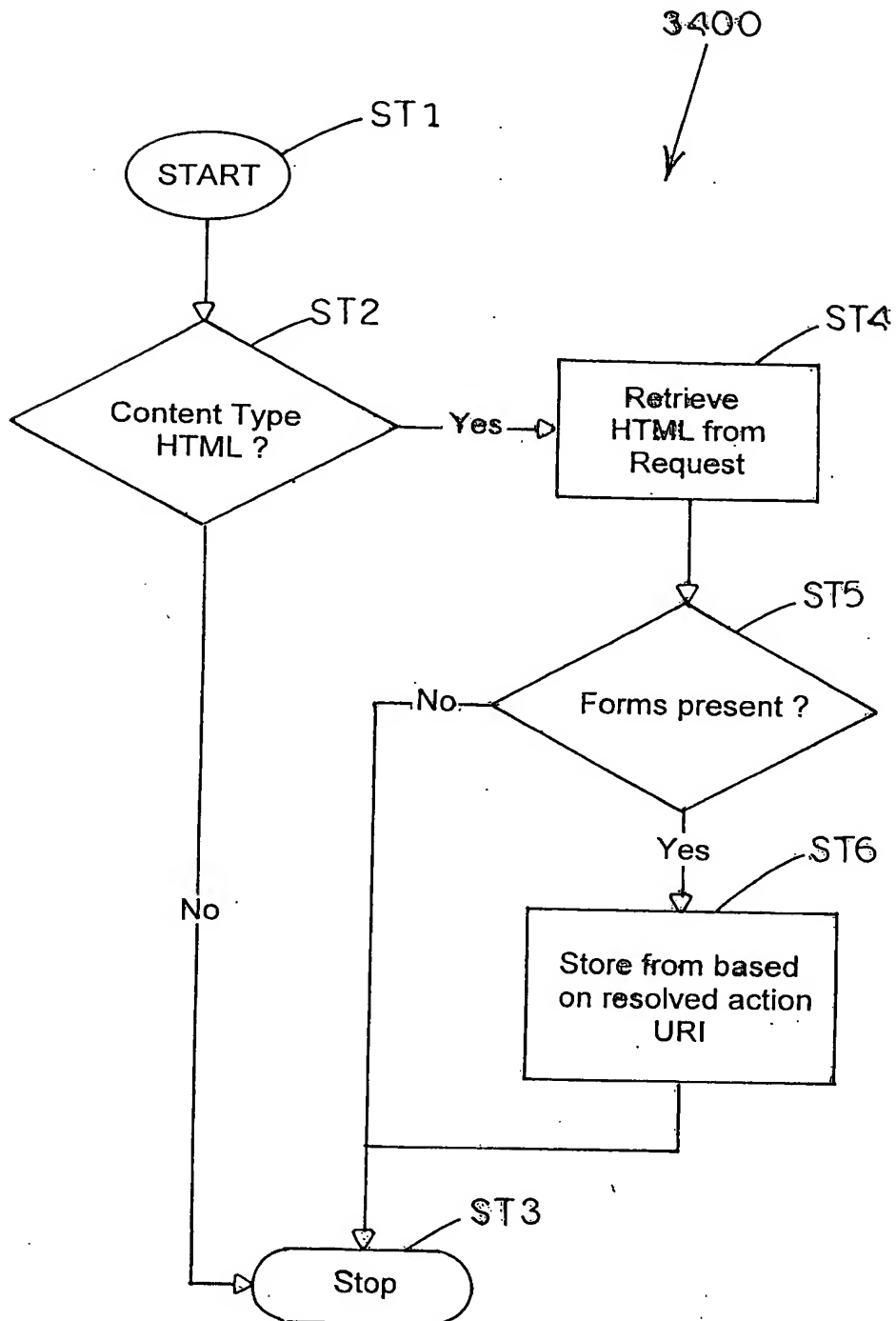


Fig. 34A

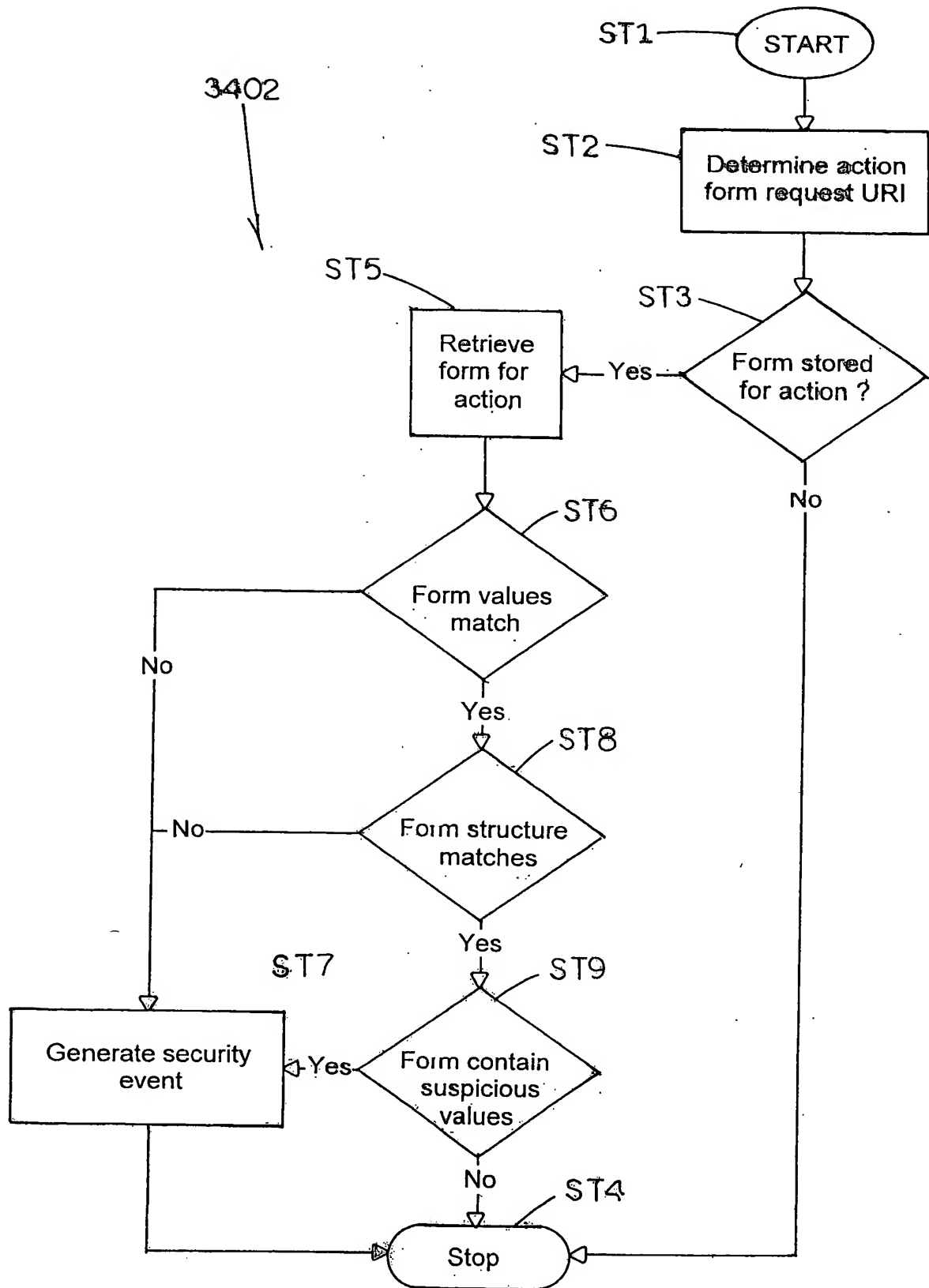


Fig. 34B

3500

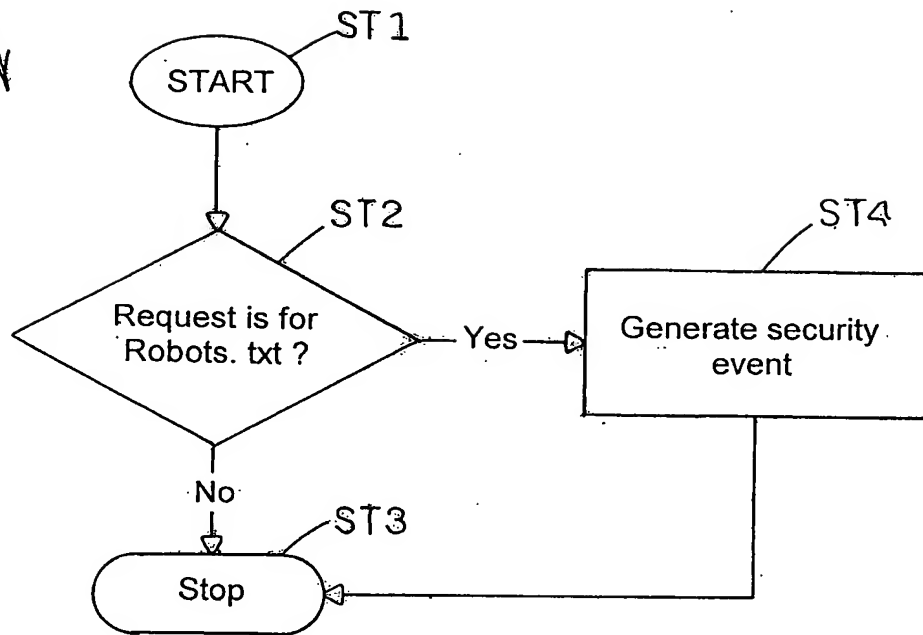


Fig. 35

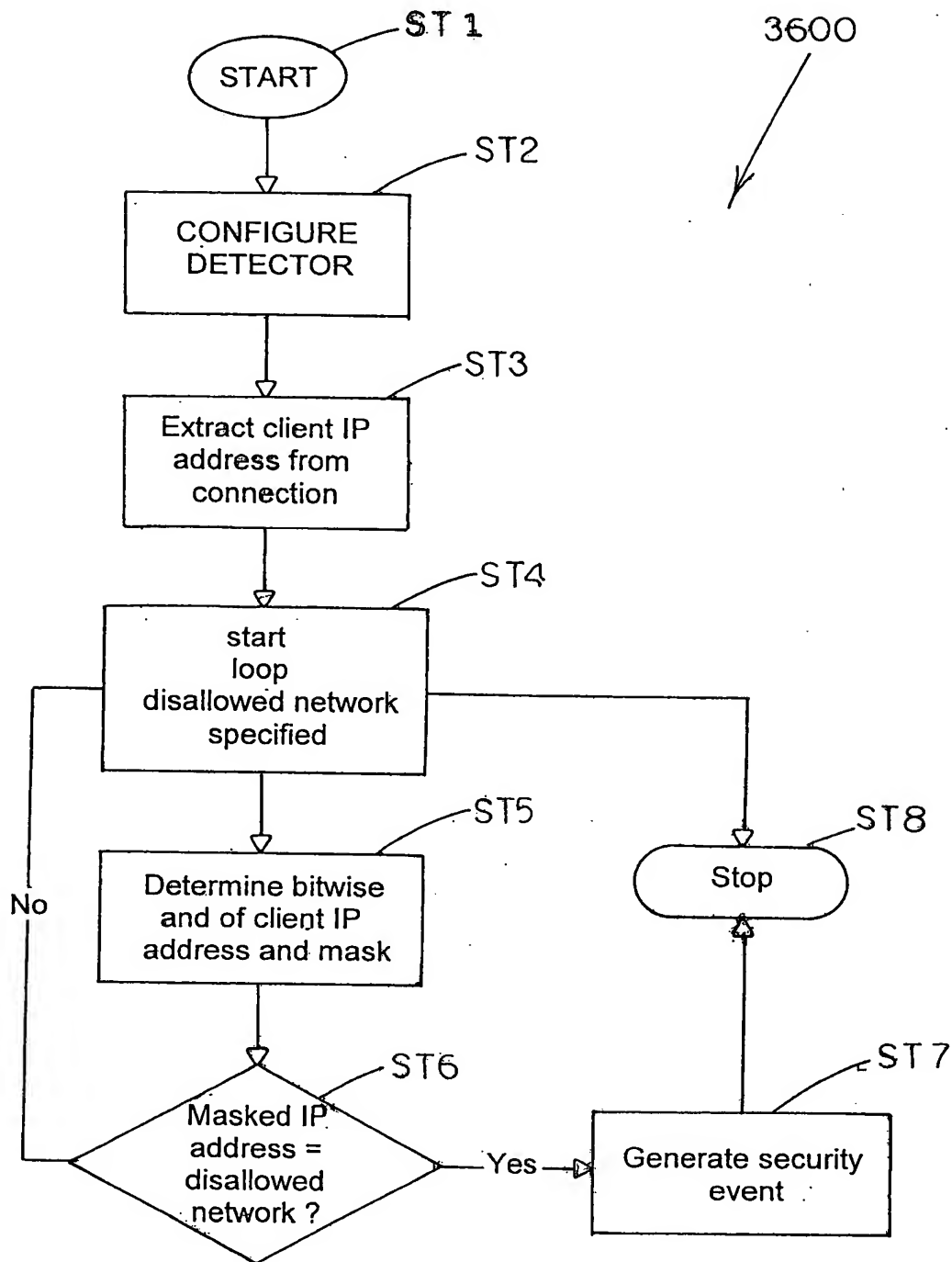


Fig . 36

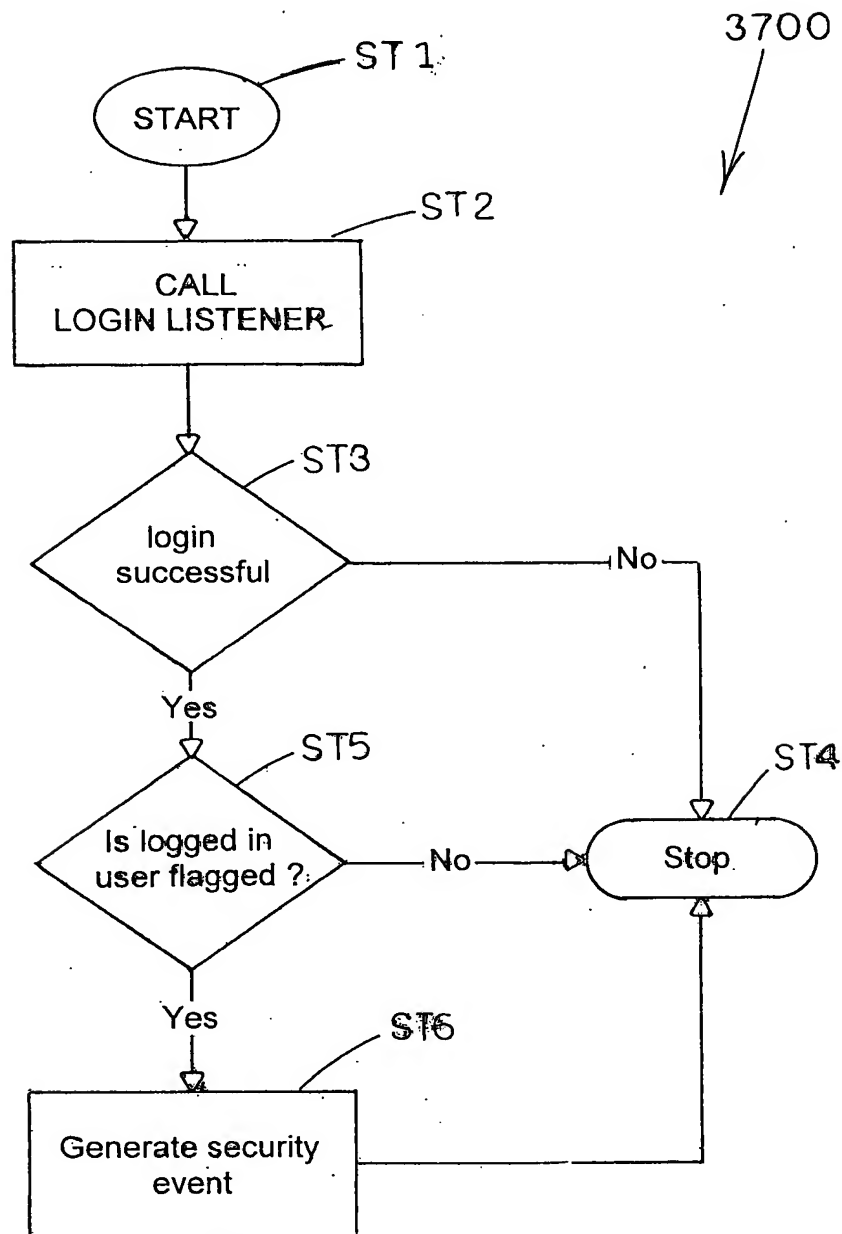


Fig. 37

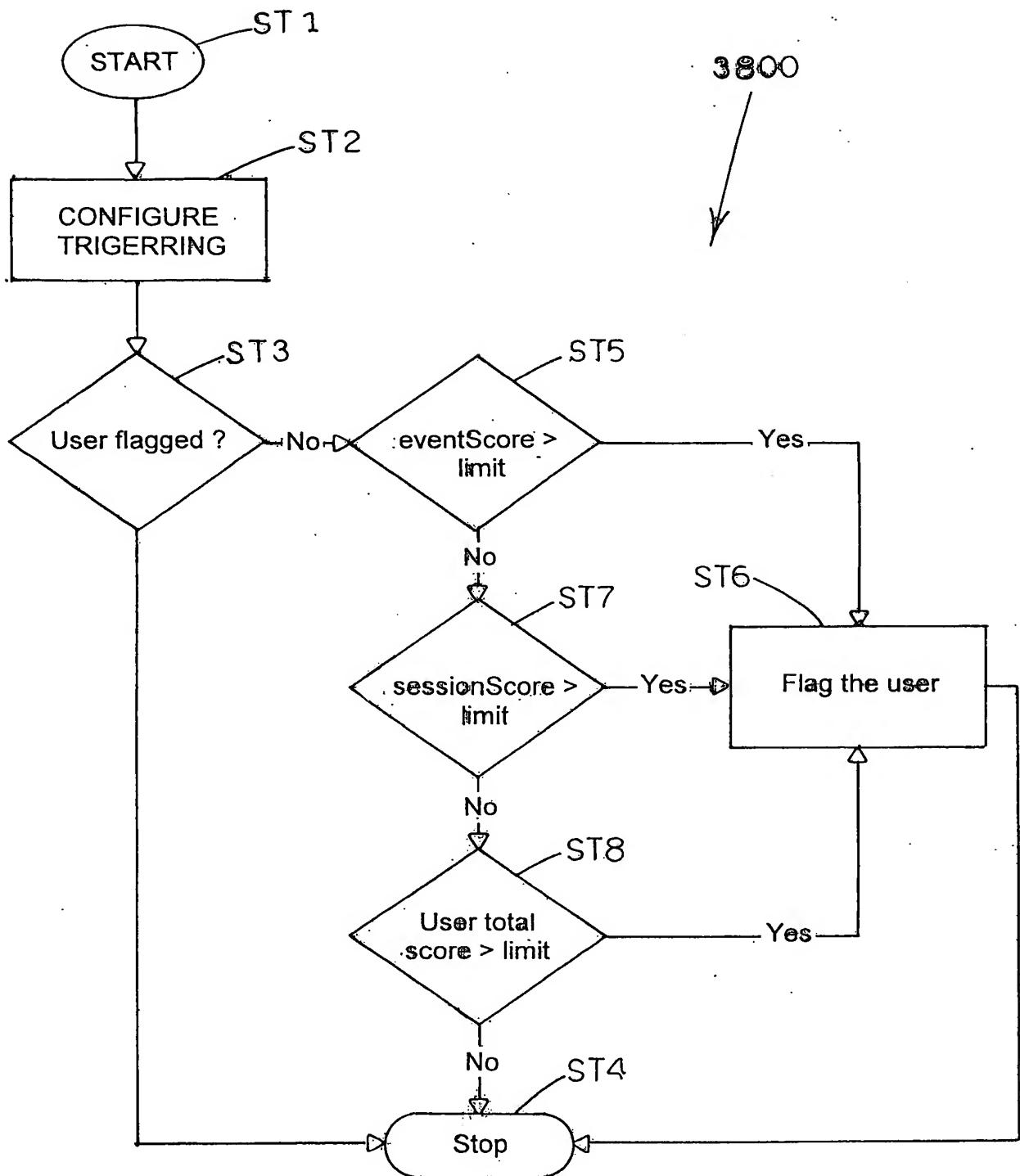
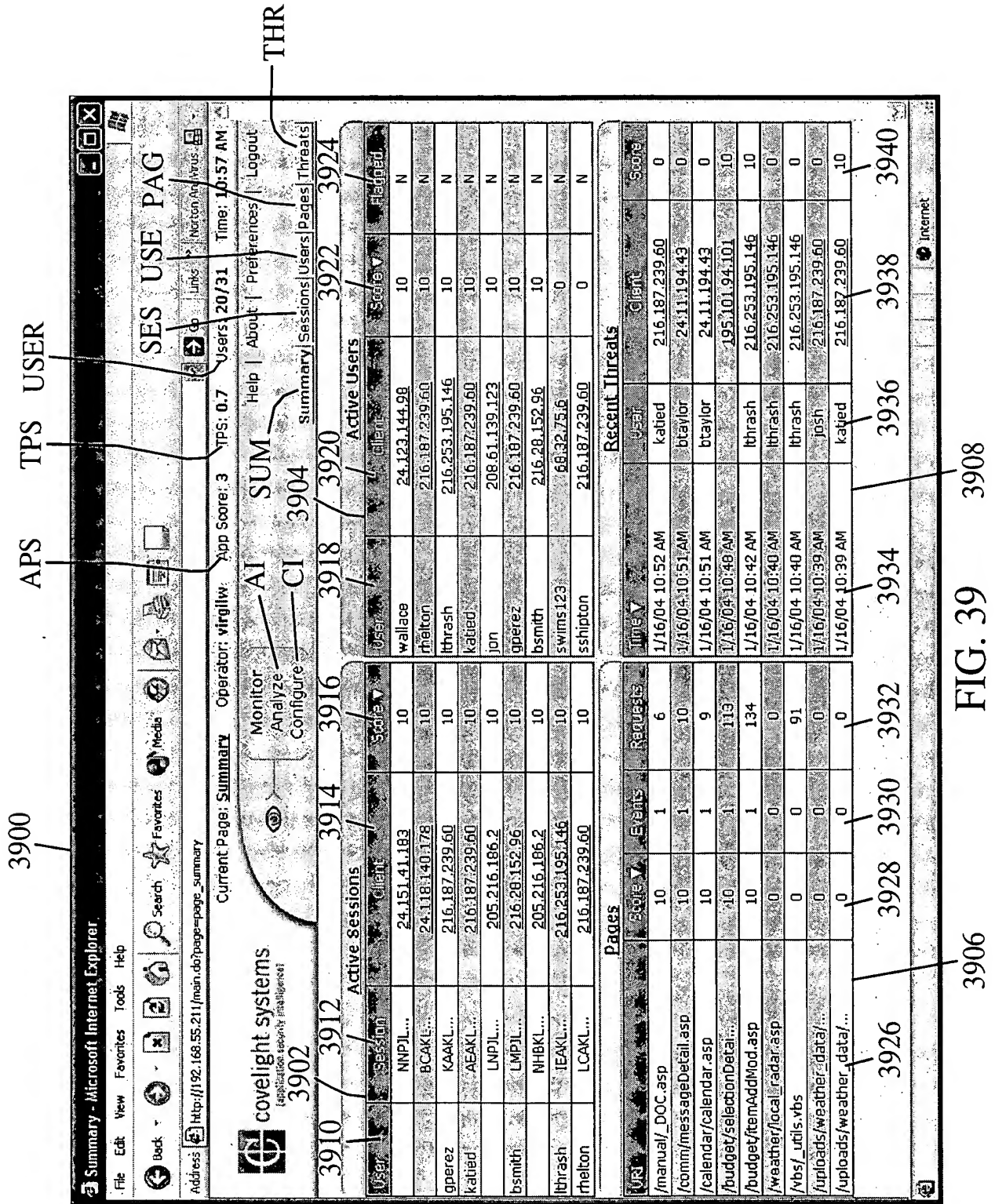


Fig. 38



4000

Microsoft Internet Explorer - Sessions

Address: http://192.168.55.211/main.do?page=page_sessions

Current Page: Sessions Operator: virgilw App Score: 3 TPS: 0.7 Users: 20/31 Time: 10:58 AM

Navigation: Back, Forward, Stop, Reload, Home, Search, Favorites, Media, Monitor, Analyze, Configure, Help, About, Preferences, Logout

Summary: Sessions Users Pages Threats

User	Session ID	Threat score	Start time	Requests	Client	Server
Hank.Cyndy	MCBKLCADGOMEPMBJD...	100	1/15/04 8:35 PM	11	205.188.208.168	192.168.2.19
Hank.Cyndy	MCBKLCADGOMEPMBJD...	100	1/16/04 2:13 AM	11	205.188.208.168	192.168.2.19
Hank.Cyndy	MCBKLCADGOMEPMBJD...	100	1/16/04 7:52 AM	11	205.188.208.168	192.168.2.19
?	LOAKLCADHFMCOEBO...	90	1/16/04 7:19 AM	50	68.118.56.35	192.168.2.19
?	LOAKLCADHFMCOEBO...	80	1/16/04 1:40 AM	50	68.118.56.35	192.168.2.19
?	LOAKLCADHFMCOEBO...	80	1/15/04 8:01 PM	50	68.118.56.35	192.168.2.19
kated	AEAKLCADBJJNMCKL...	70	1/16/04 4:55 AM	691	216.187.239.60	192.168.2.19
kated	AEAKLCADBJJNMCKL...	60	1/15/04 11:17 PM	691	216.187.239.60	192.168.2.19
?	JCBKLCADCCBPNCNP...	50	1/16/04 2:13 AM	4	205.188.209.78	192.168.2.19
?	JDBKLCADHMGKMKHC...	50	1/15/04 8:45 PM	7	64.12.96.42	192.168.2.19
?	ECBKLCADBLJHNMFFA...	50	1/16/04 7:48 AM	17	198.81.26.40	192.168.2.19
?	NBBKLCADABKLPBGMG...	50	1/16/04 7:42 AM	2	198.81.26.175	192.168.2.19
?	NBBKLCADABKLPBGMG...	50	1/16/04 2:03 AM	2	198.81.26.175	192.168.2.19
?	LJAKLCADJIEHPGPGI...	50	1/16/04 12:32 AM	1	152.163.252.2	192.168.2.19
?	ECBKLCADBLJHNMFFA...	50	1/16/04 2:09 AM	17	198.81.26.40	192.168.2.19

Showing 1-15 of 500 (1085 Total Items)

Navigation: Refresh, Repeat Filter, Application Sessions, Export CSV, Export XML

4004 4006 4008 4010 4012 4014 4016

THR

FIG. 40A

4032

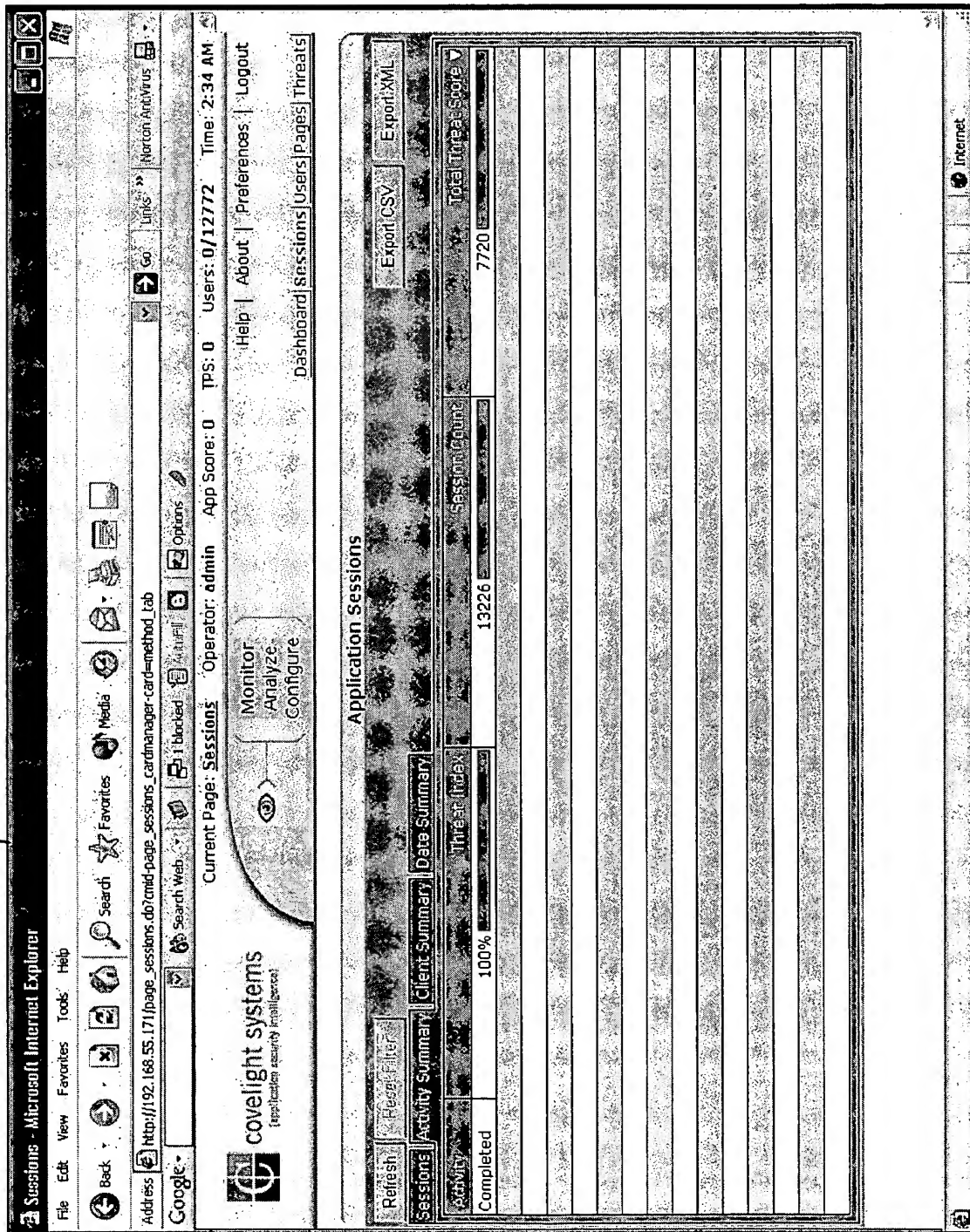


FIG. 40B

4034

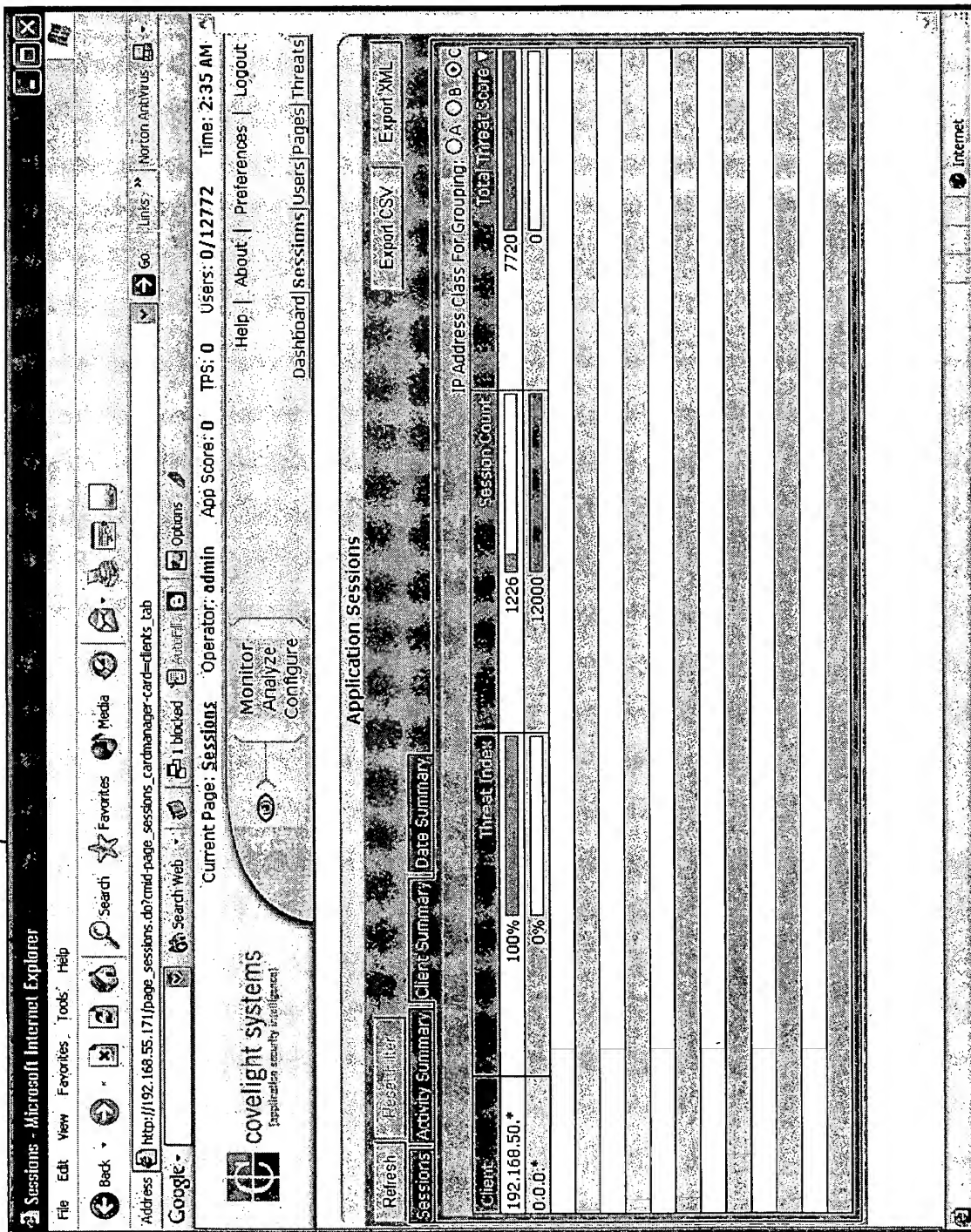


FIG. 40C

4036

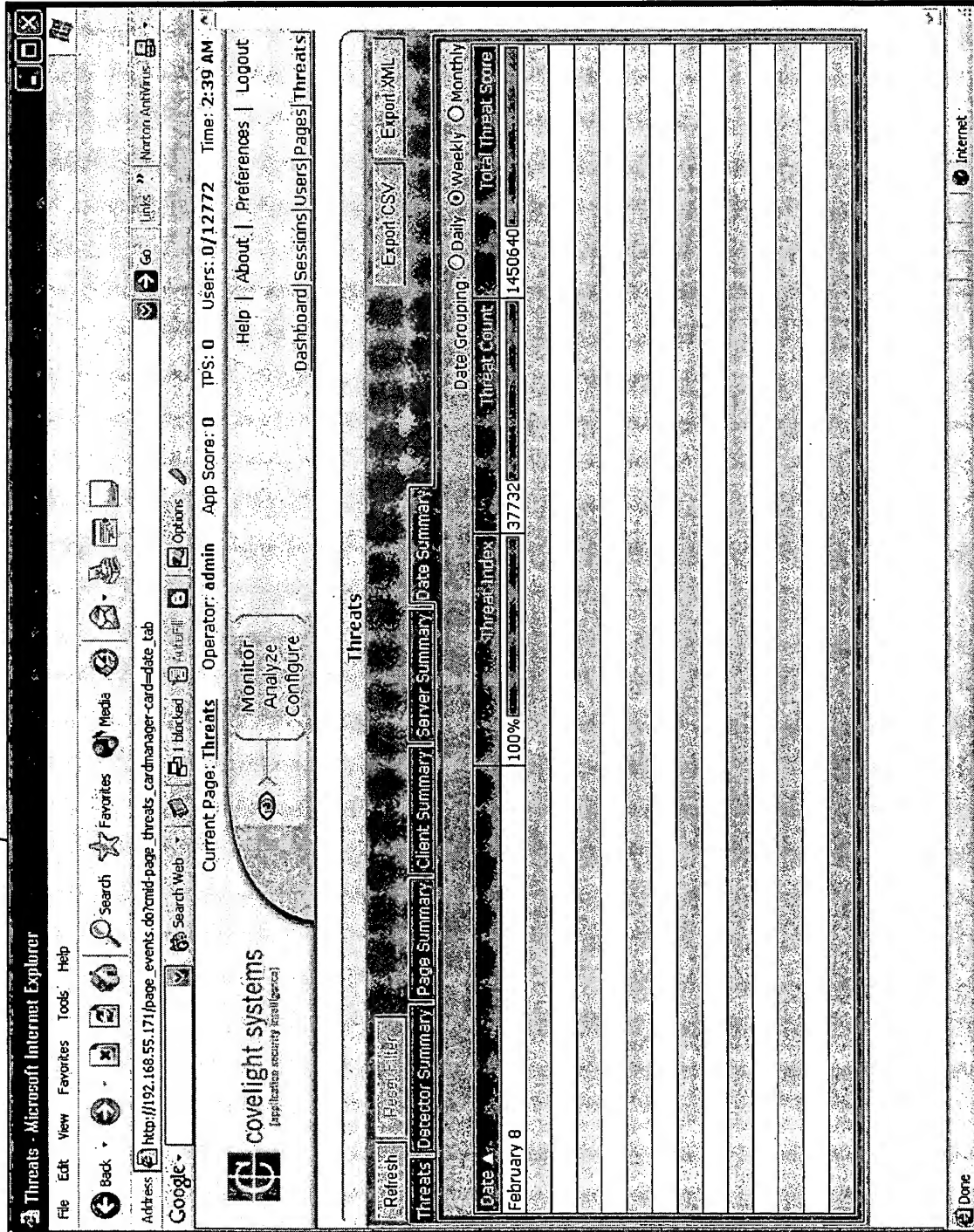


FIG. 40D

4100

The screenshot displays a web application interface for 'covelight systems'. The top navigation bar includes links for 'Session Detail', 'Sessions', 'Users', 'Pages', and 'Threats'. The main content area is divided into two sections: 'Session Detail' and 'Threats'.

Session Detail Section:

- Session:** MGBKLGADGONEDMBJDMNGAEON
- User:** Hank.Cyndy (Search)
- Login Method:** Login Form
- Start Time:** 1/15/04 8:35 PM
- Last Accessed Time:** 1/15/04 8:36 PM
- Client IP Address:** 205.188.208.168 (Search)
- Server IP Address:** 192.168.2.19
- Session Threat Score:** 100
- Request Count:** 11
- Threats:** 4

Threats Section:

- View Transactions**
- View Threats**

Summary Section (SUM):

- Current Page:** Sessions
- App Score:** 3
- TPS:** 0.4
- Users:** 20/31
- Operator:** virgilw
- Time:** 11:04 AM

Navigation and Tools:

- Back, Forward, Search, Favorites, Media, Monitor, Analyze, Configure**
- Help, About, Preferences, Logout**

Footer:

- Done**
- Internet**

THR

FIG. 41

4200

Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Stop Search Favorites Media

Address: http://92.168.55.21/main.do?page=page_users

Current Page: Users Operator: virgilw App Score: 3 TPS: 0.5 Users: 20/31 Time: 10:58 AM

covelight systems
(web-based security intelligence)

Monitor Analyze Configure

Summary Sessions Users Pages Threats

4226 4228

Application Users

Refresh Reset Filter

Users Flagged Summary Client Summary Last Login Summary

Showing 1-12 of 31 (61 Total Items)

User	Current Score	Max Score	Total Score	Total Requests	Arg Requests	Client	Flagged
wallace	10	10	50	82	13	24,123,144,98	N
rhelton	10	20	40	60	20	216,187,239,60	N
lthrash	10	30	100	520	57	216,253,195,146	N
kated	10	70	80	1382	172	216,187,239,60	N
jon	10	25	50	888	296	208,611,139,123	N
operez	10	20	40	212	70	216,187,239,60	N
bsmith	10	20	40	258	86	216,28,152,96	N
swims123	0	10	20	124	41	68,32,75,6	N
sshington	0	10	20	36	12	216,187,239,60	N
starden	0	10	20	78	26	198,143,244,44	N
scavender	0	10	30	15	5	216,187,239,60	N
rwarburton	0	40	160	506	46	216,187,239,60	N
mtaylor	0	20	50	598	149	66,180,103,154	N

Reset Delete Search

Internet

THR

4218

4216

4214

4212

FIG. 42

4208

4206

4204

4300

Users - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Media

Address http://192.168.55.211/page_users.do?rowlink=wallace&tableIndex=0&table=page_users_table

Current Page: Users / User Detail Operator: virgilw App Score: 3 TPS: 0.2 Users: 20/31 Time: 11:05 AM

Monitor Analyze Configure

Summary Sessions Users Pages Threats

Help About Preferences Logout

SES USE PAG

Links Norton Antivirus

covelight systems
Application Security Intelligence

THR

User Detail

User: wallace

Current Threat Score: 10 Last Login Time: 1/16/04 9:33 AM

Average Session Score: 8 Longest Session Duration: 1m 36s

Highest Session Score: 10 Average Session Duration: 52 s

Total Threat Score: 50 Total Session Time: 5m 13s

Total Threat Count: 11 Last Client IP Address: 24.123.144.98 8nbsp;(Search)

Total HTTP Requests: 82 Last Server IP Address: 192.168.2.19

Average HTTP Requests Per Session: 13 Active Sessions: 2

Last Reset: Never Total Sessions: 6

View Transactions View Threats

Flagged: ☐ Notes:

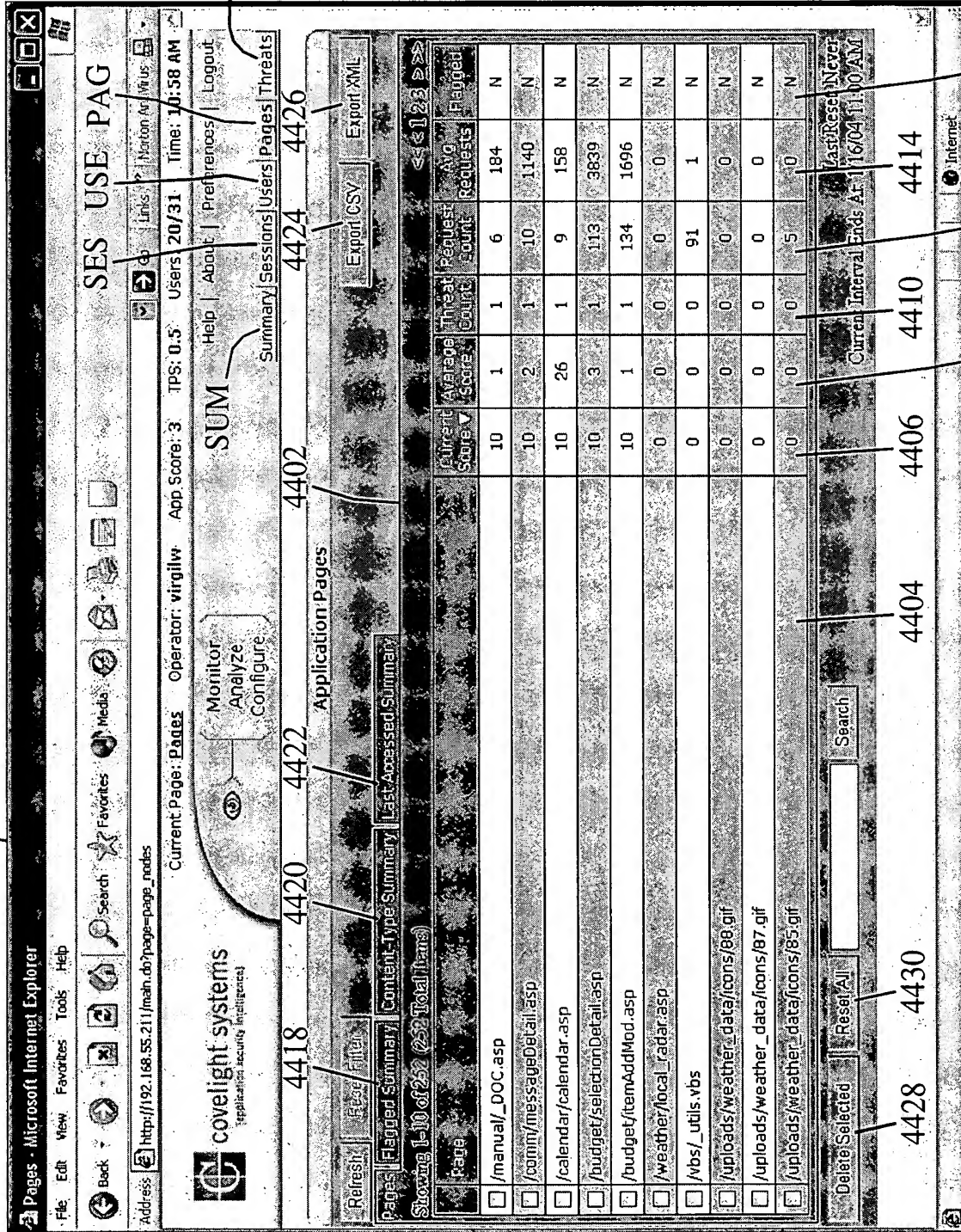
Apply

Done

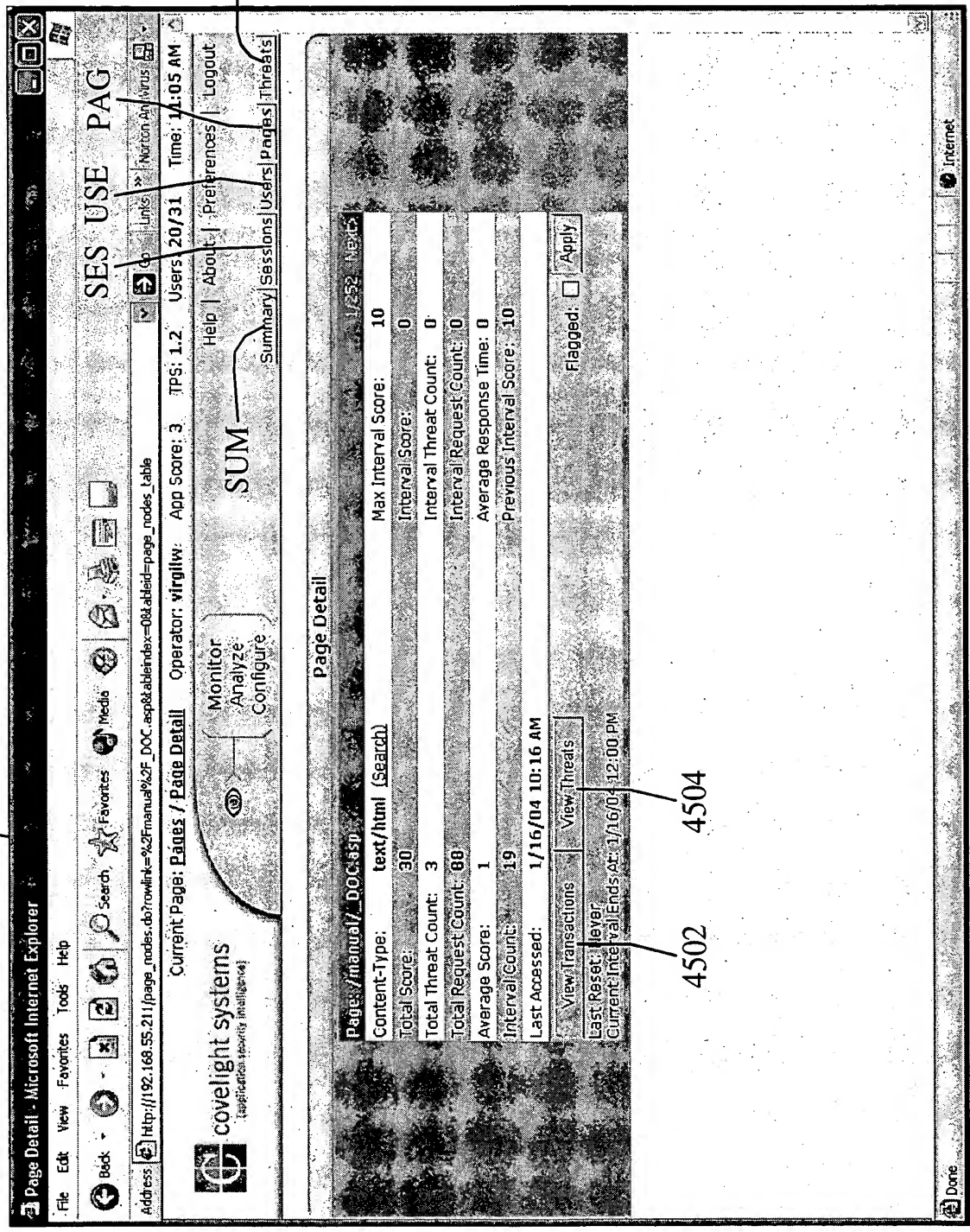
Internet

4302 4304

FIG. 43



4500



THR

SUM

4504

4502

FIG. 45

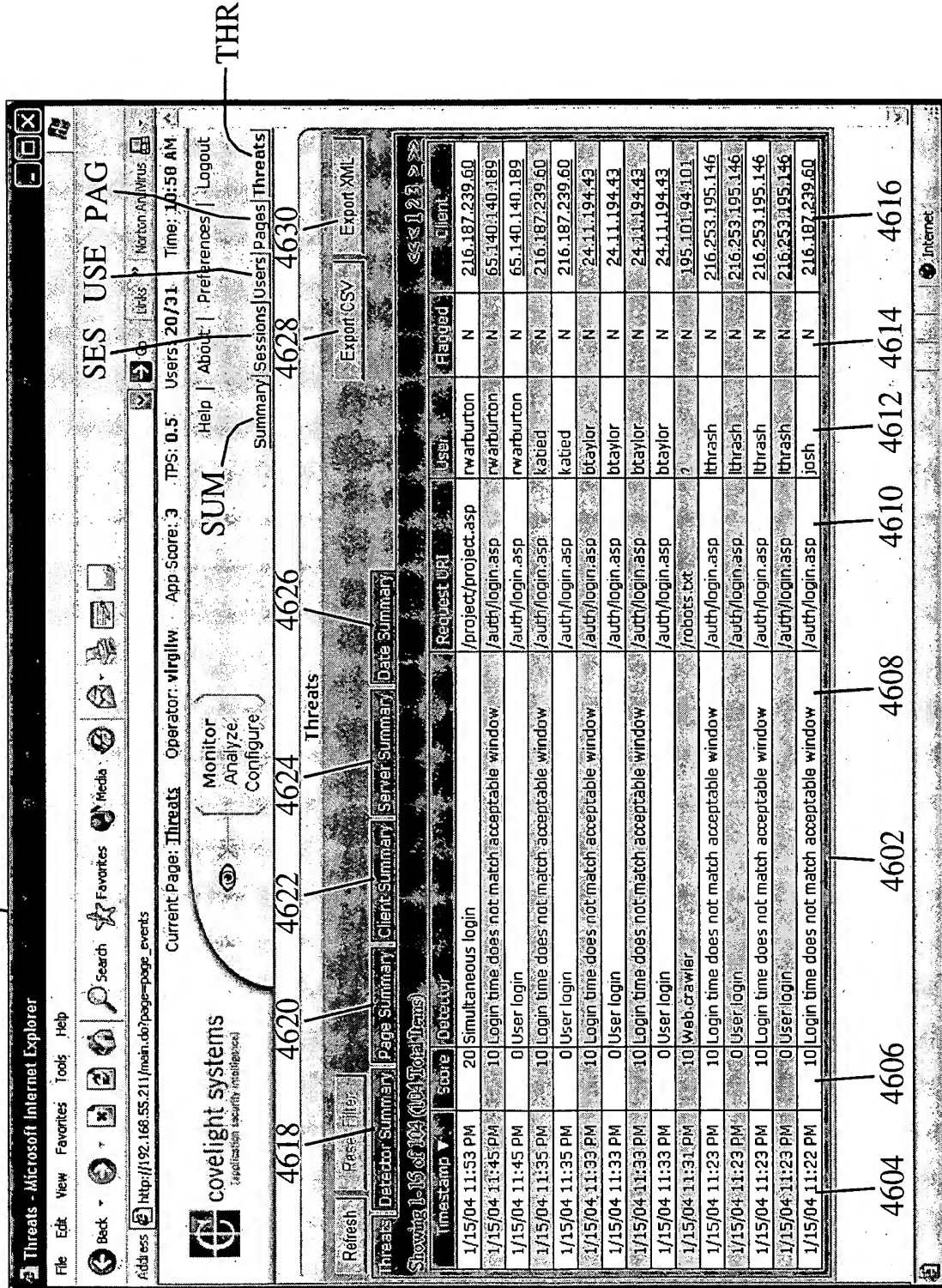


FIG. 46A

4632

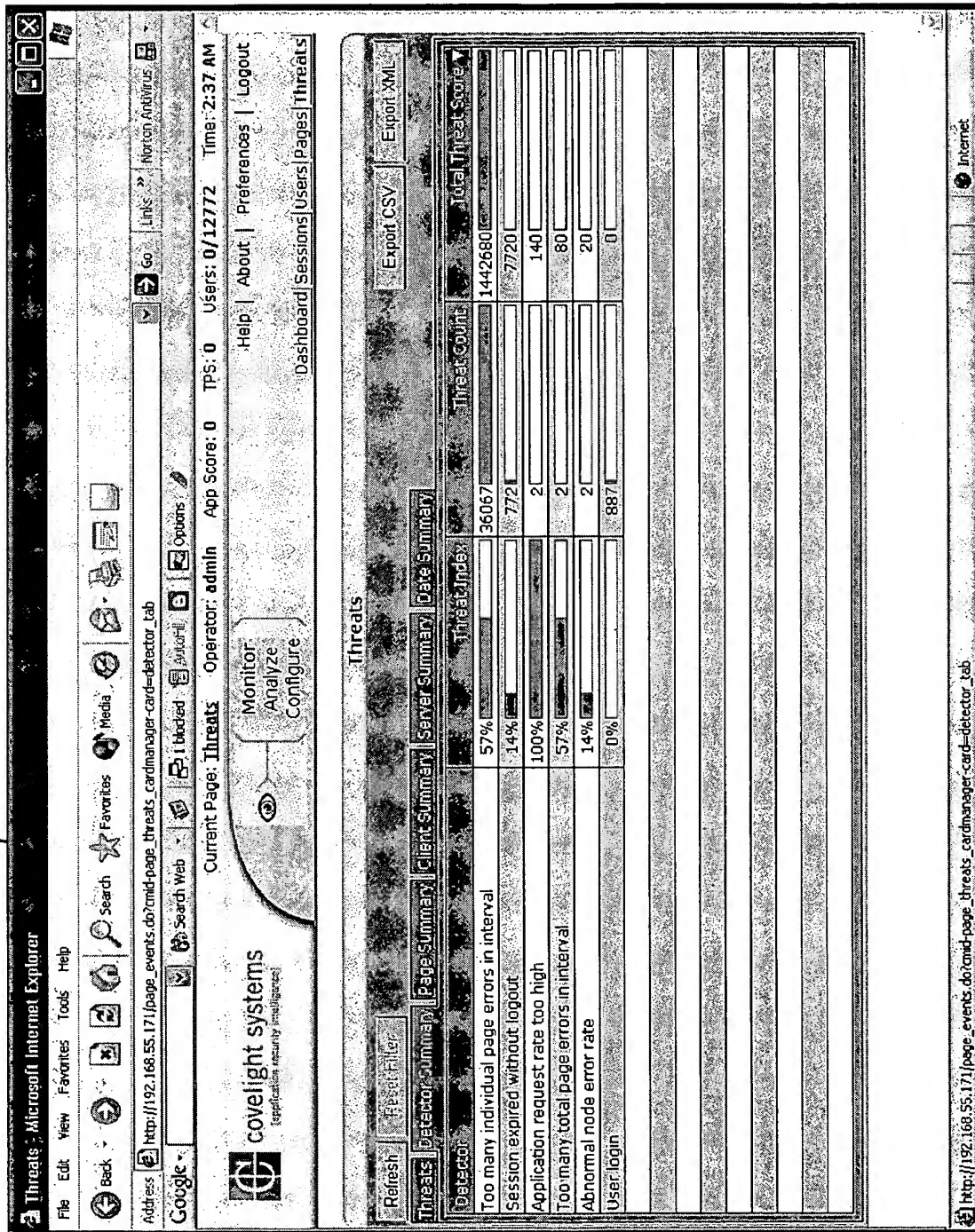
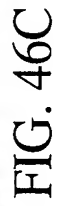


FIG. 46B



4636

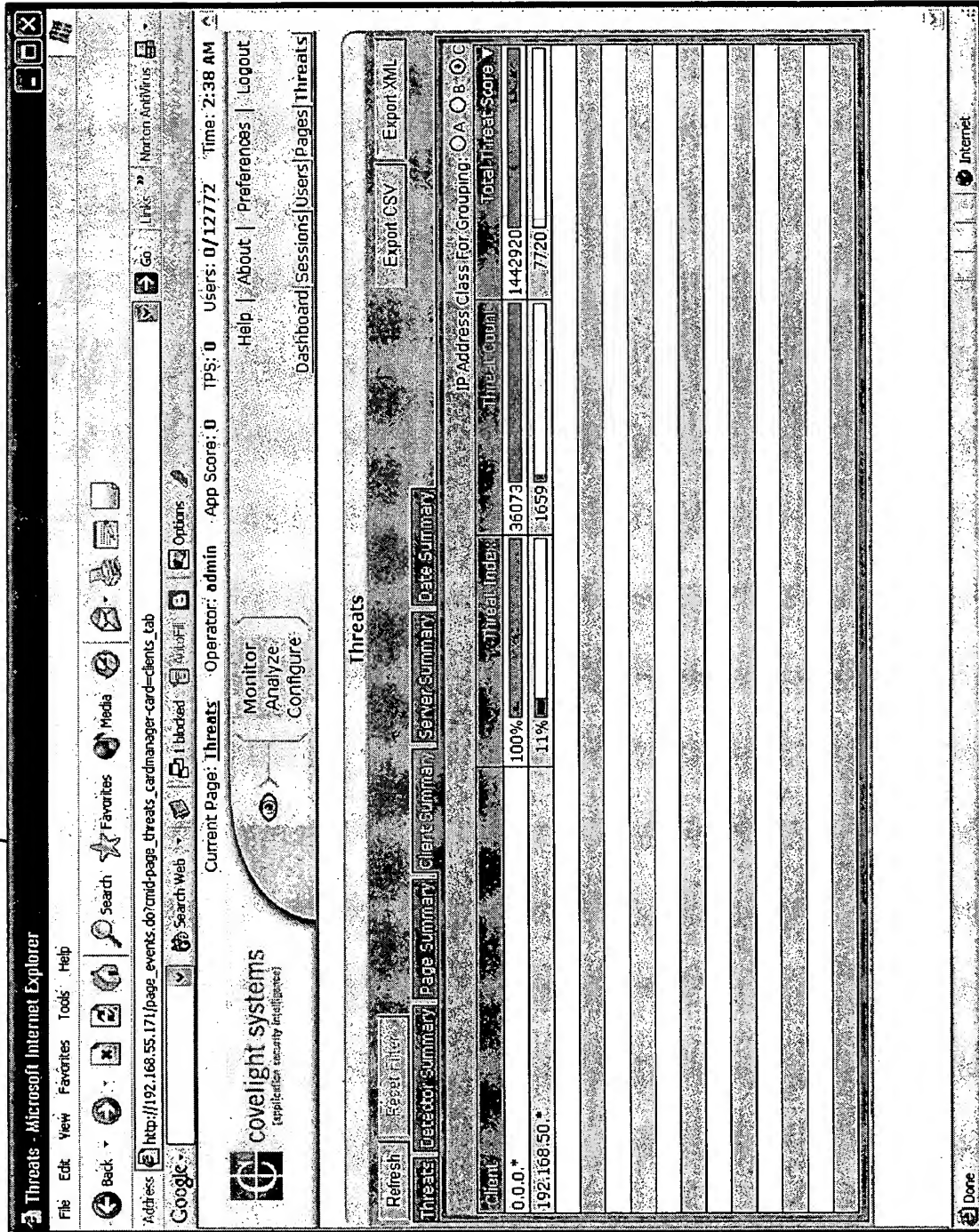


FIG. 46D

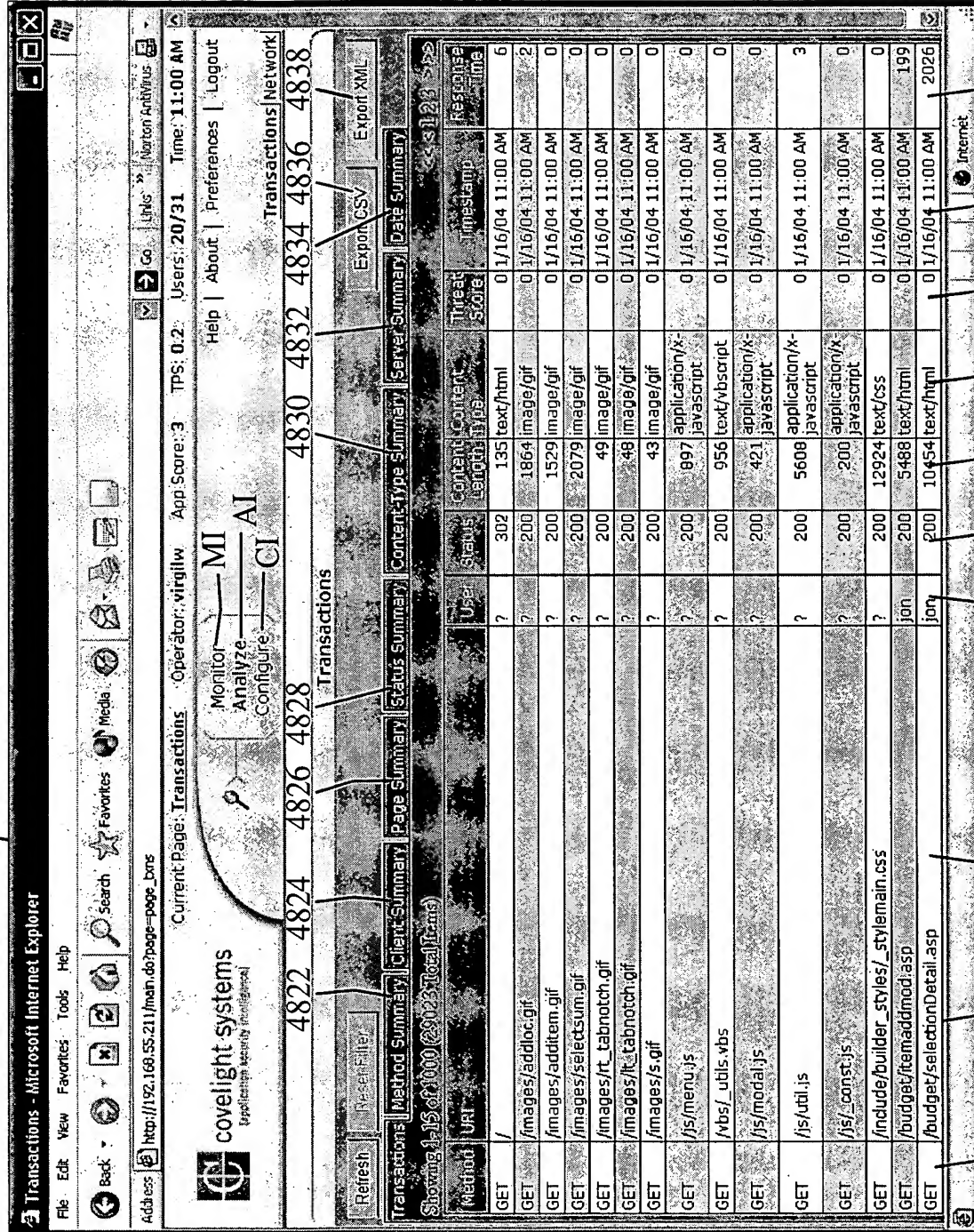






FIG. 47

4800



4804 4802 4806 FIG. 48 4808 4810 4812 4814 4816 4818 4820

Title: METHODS, SYSTEMS AND COMPUTER PROGRAM PRODUCTS FOR MONITORING USER BEHAVIOR FOR A SERVER APPLICATION
Applicant(s): Motsinger et al.
Atty. Docket No.: 1503/4/2

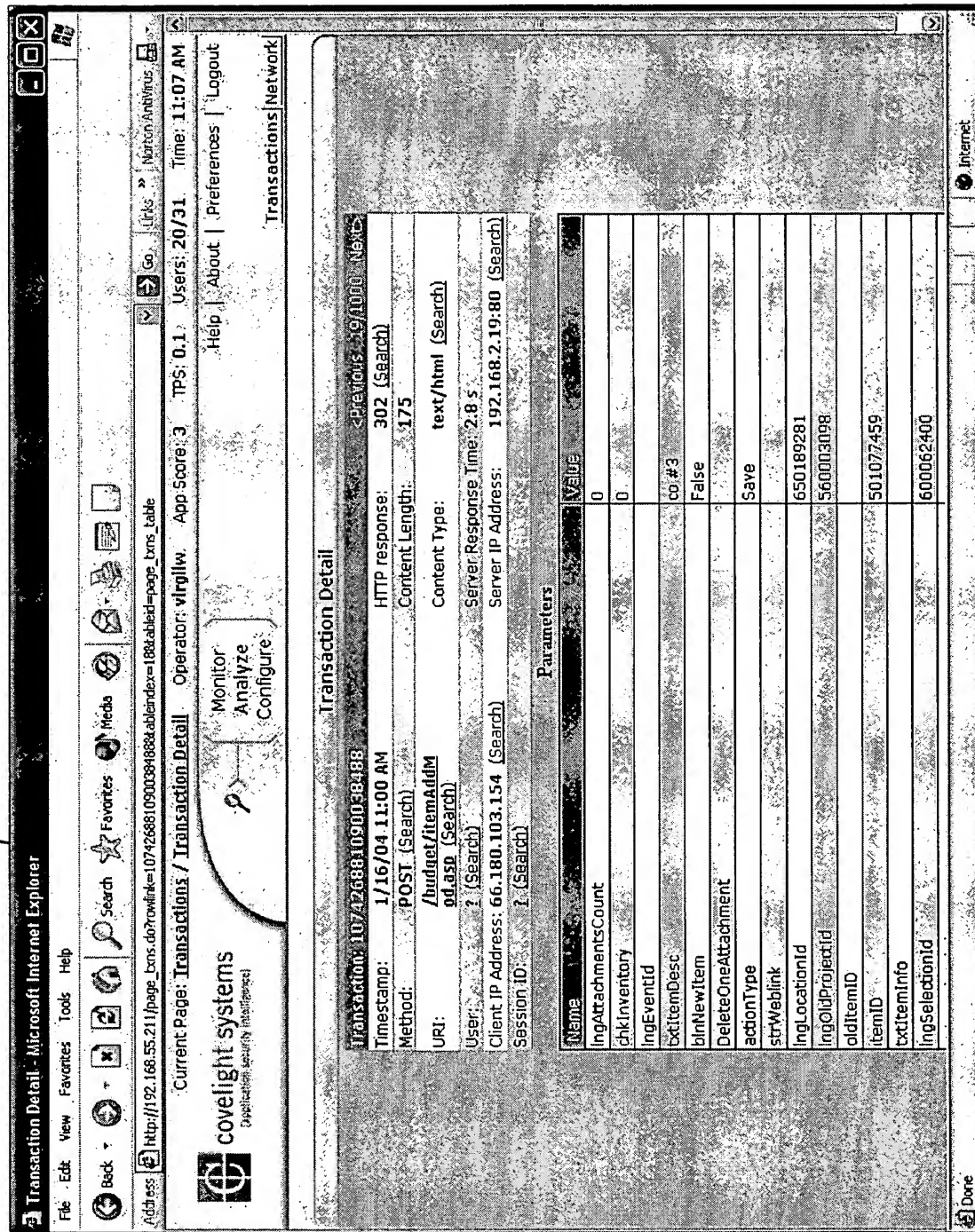


FIG. 49

5000

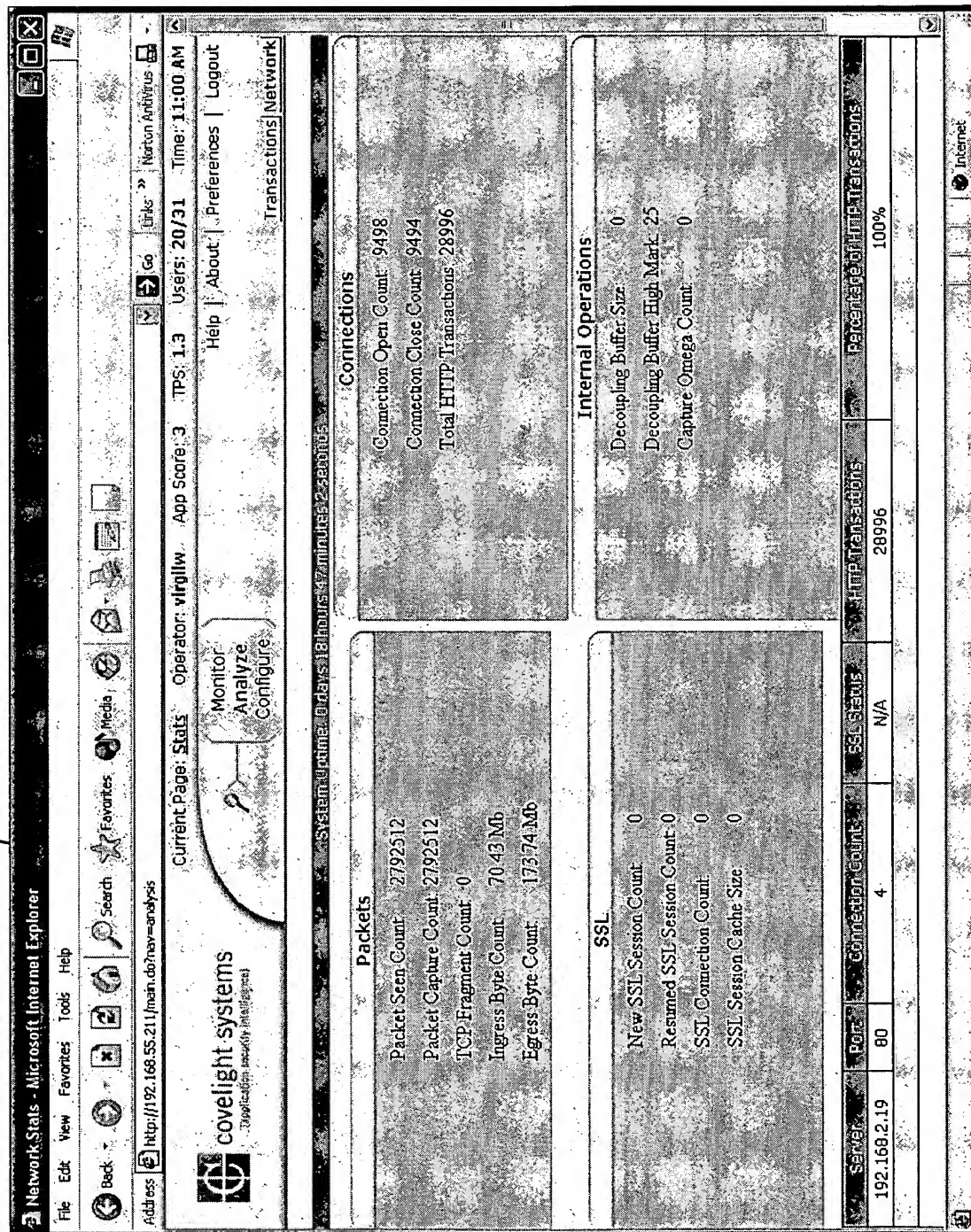


FIG. 50

5100

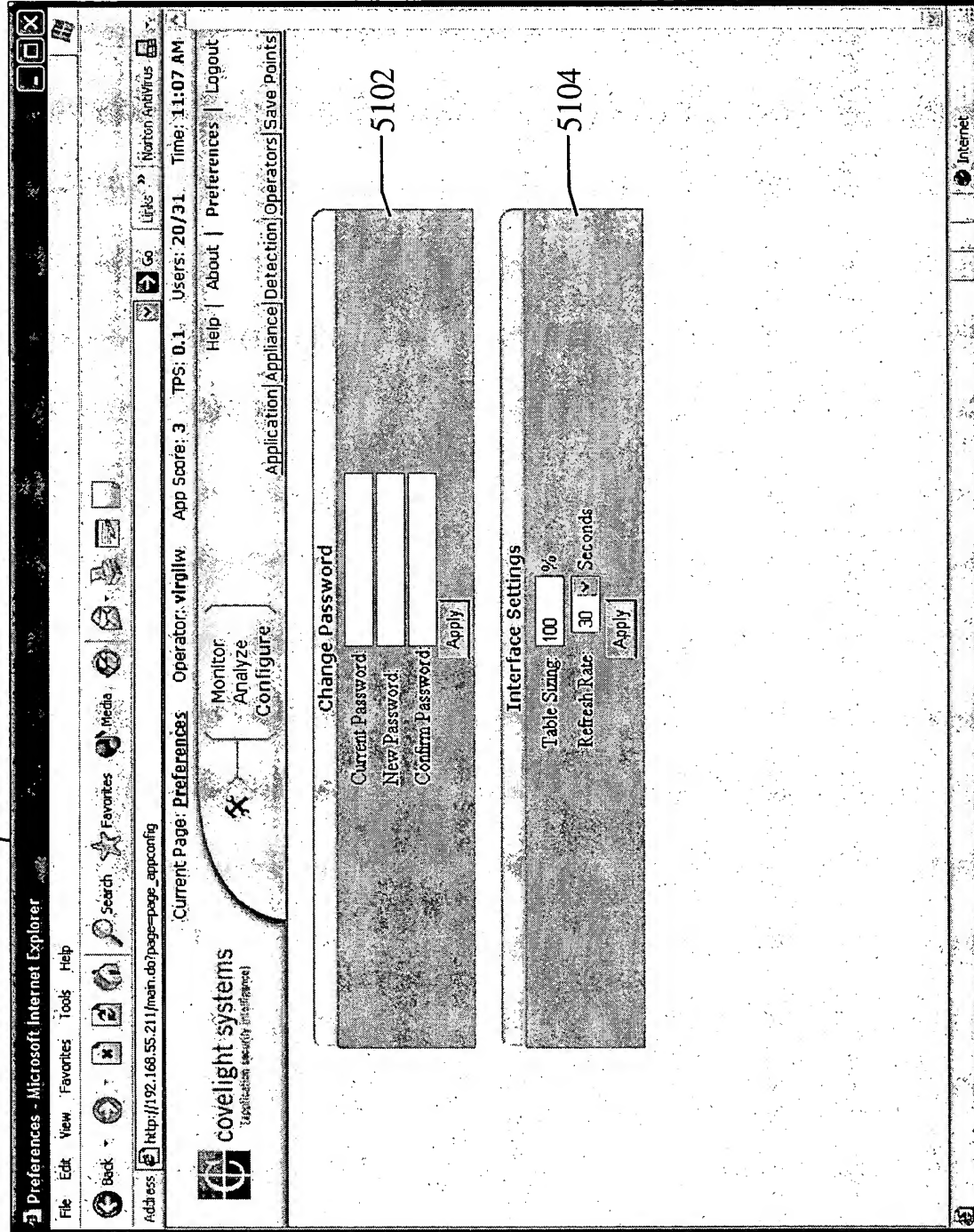


FIG. 51

5200

5202

FIG. 52

5300

Appliance - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media

Address: http://192.168.55.211/page_sensorfg.do?cmd=page_cfid=smtpserversettings_tab

Current Page: Appliance Operator: vlrqllw App Score: 4 TPS: 1.7 Users: 23/31 Time: 11:28 AM

Links: Norton Antivirus

Help About Preferences Logout

Application Appliance Detection Operators Save Points

covelight systems
 Application security intelligence

Control Network Time Firmware SMTP Server

SMTP Server: mail.invalid.com

Username:

Password:

From Name: Covelight Sensor

From Address: anonymous@invalid.com

Enable Pop before send ☐

Apply

Internet

FIG. 53

5400

Appliance - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back - Search Favorites Media

Address: http://192.168.55.211/page_sensorfg.do?cmd=page_cfg&appliance_card=time_tab

Go Links "Morton Antivirus"

Current Page: Appliance Operator: virgilw App Score: 4 TPS: 1.2 Users: 20/31 Time: 11:11 AM

Help | About | Preferences | Logout

Application | Appliance | Detection | Operators | Save Points

covelight systems
"Application Security Intelligence"

Monitor Analyze Configure

Control Network Time Firmware SMTP Server

Month/Day/Year Hours:Minutes Timezone

01 / 16 / 2004 11 11 Universal Time UCT

AM PM

Set Time

Internet

5402

FIG. 54

5500

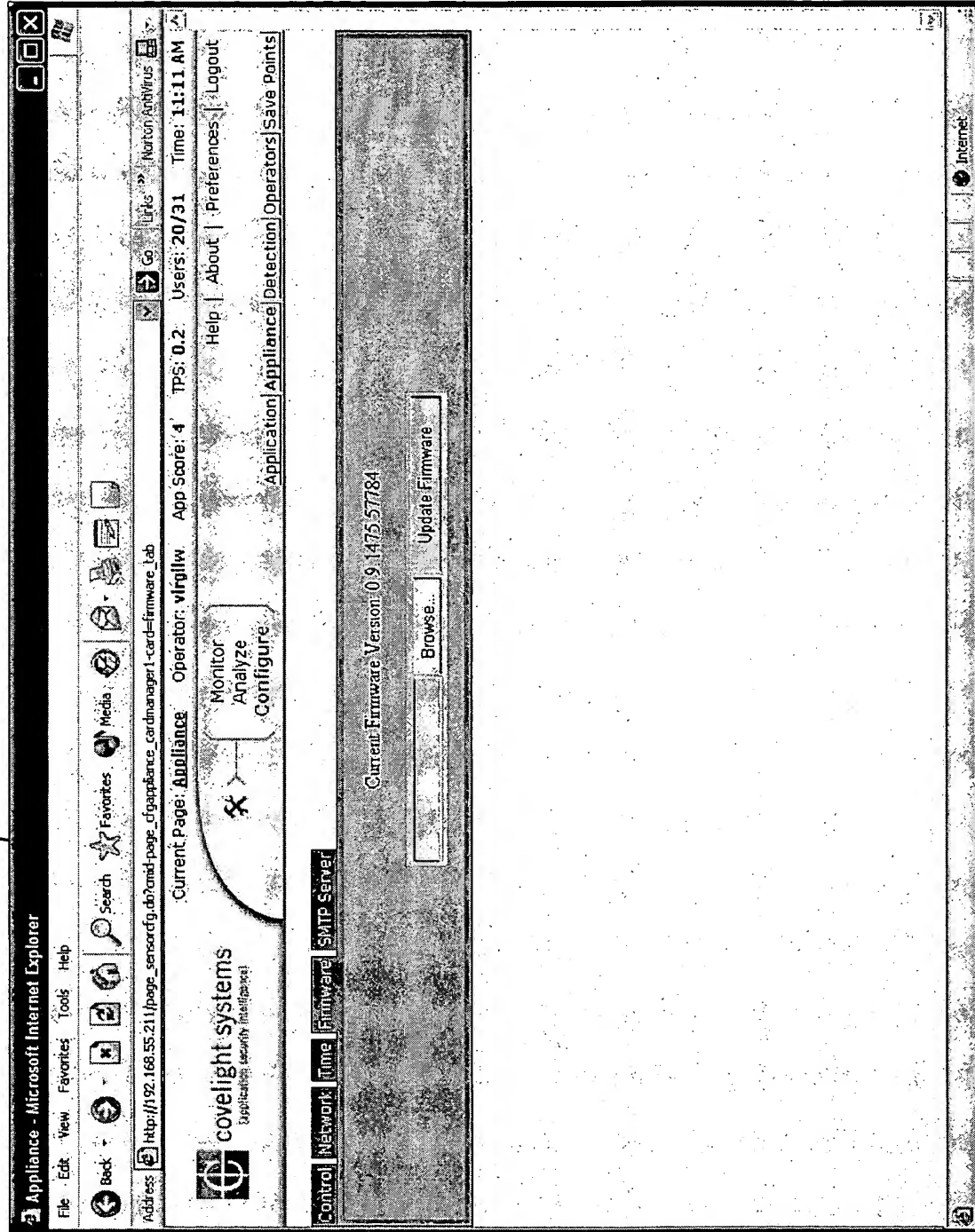


FIG. 55

REPLACEMENT SHEET

Title: METHODS, SYSTEMS AND COMPUTER
PROGRAM PRODUCTS FOR MONITORING USER
BEHAVIOR FOR A SERVER APPLICATION
Applicant(s): Motsinger et al.
Atty. Docket No.: 1503/4/2

5600

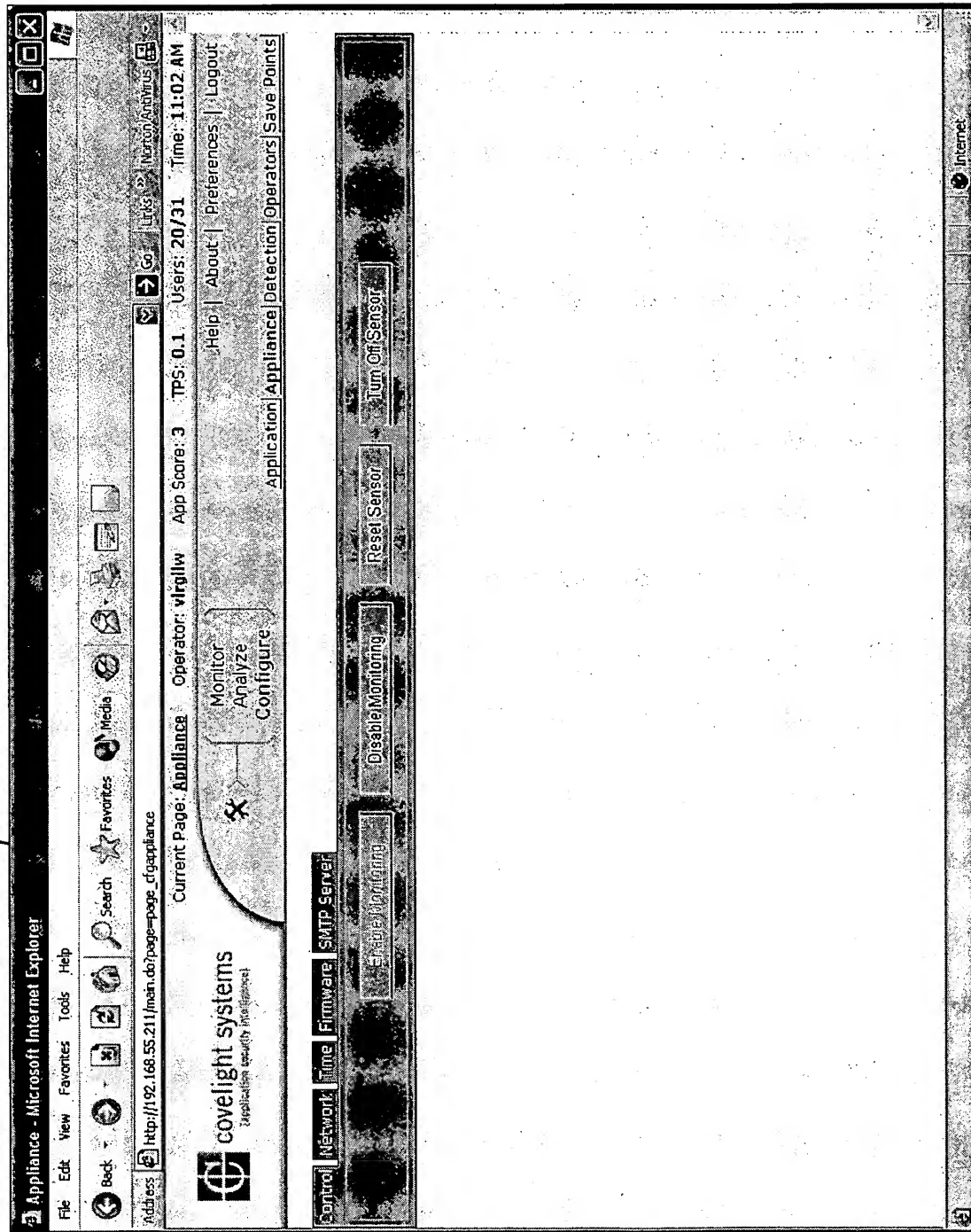


FIG. 56



FIG. 57

5800

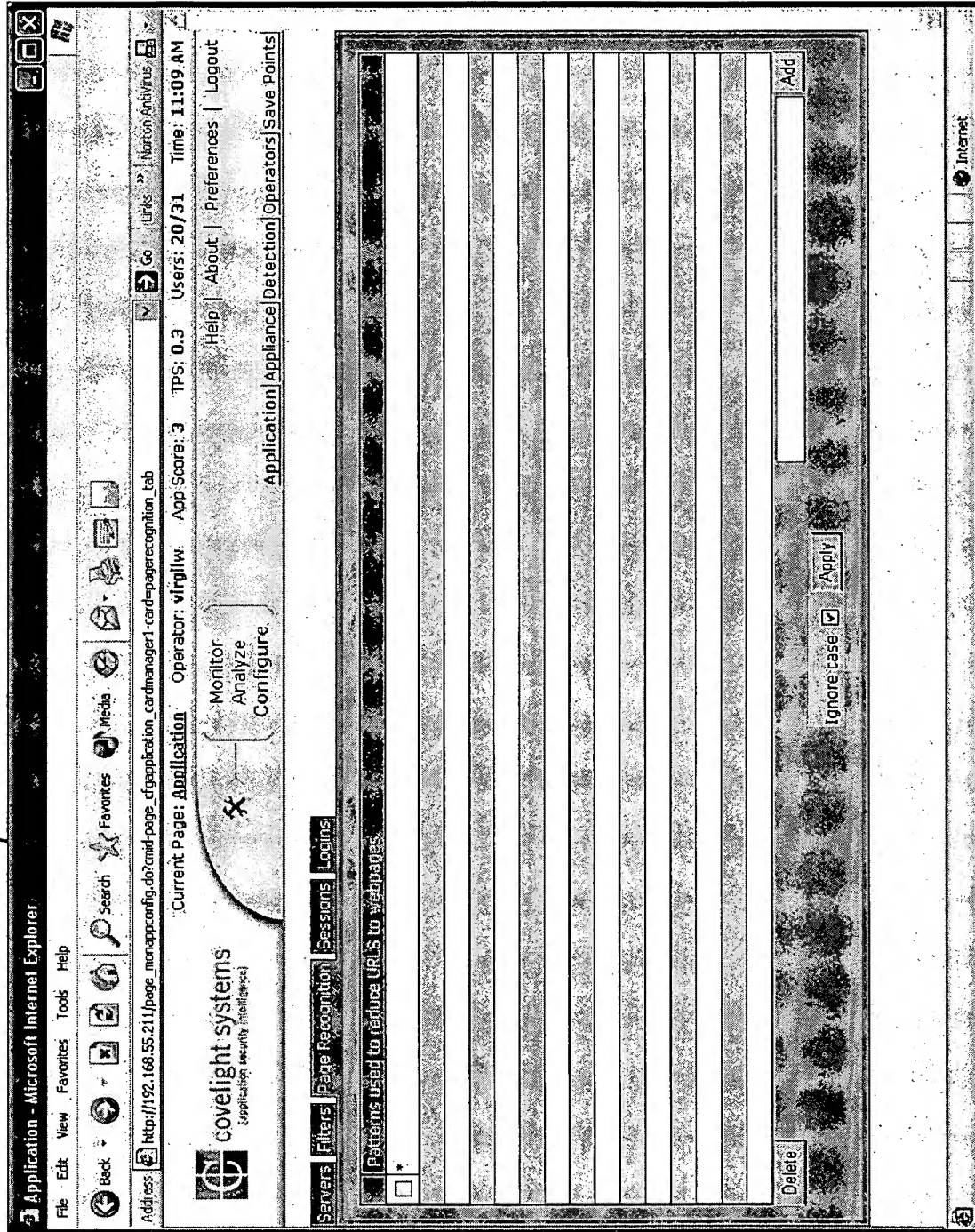


FIG. 58

5900

Application - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Media

Address http://192.168.55.21/page_sessiondetectionfg.do?cmd=page_cfapplication_cardmanager1-card=sessions_tab

Current Page: Application Operator: virgilw App Score: 3 TPS: 0.2 Users: 20/31 Time: 11:09 AM

Help About Preferences Logout

Application | Appliances | Detection | Operators | Save Points

7002

covelight systems
(Application Security Intelligence)

Monitor Analyze Configure

Servers Filters Page Recognition Sessions Logins

Session Management

Standard J2EE sessions
Standard PHP sessions
Standard ASP sessions
Custom sessions

Application Server Features

Permissive sessions
Strict sessions

Session timeout in minutes 125
Ignore Case

Custom Settings

Sessions are cookie based
Session cookie name ASPSESSIONID
Treat cookie name as a prefix

Session ID may be encoded as a query argument in URLs
Name of query argument

Session ID may be encoded as a path parameter in URLs
Name of path parameter

Internet

FIG. 59

6000

Application - Microsoft Internet Explorer
File Edit View Favorites Tools Help

Address http://192.168.55.211/page_loginDetectionCfg.do?cmd=page_configuration_cardmanager1-card-logins_tab Go Users: 20/31 Time: 11:10 AM Norton/AviVirus

Back Forward Stop Search Favorites Media

Current Page: Application Operator: virgilw App Score: 3 TPS: 0.2 Help About Preferences Logout

Application | Appliance Detection | Operators | Save Points

6002

Monitor Analyze Configure

covelight systems
Application Security Intelligence

Servers Filters Page Recognition Sessions Logins

Form Based Login Detection

☒ Form based login
☐ Use case sensitive matches

URL pattern of login action

Form field containing user ID

☐ Logout page defined
URL pattern of logout action

Form Based Login Result

☐ Fail if login form is present in returned HTML
☐ Fail if login response is a redirect to the following URL pattern
☐ Fail if response HTML contains the following text
☐ Succeed if login response a redirect to the following URL pattern
☐ Succeed if response HTML contains the following text
☐ Succeed if the application server creates a session

Update

Internet

FIG. 60

6100

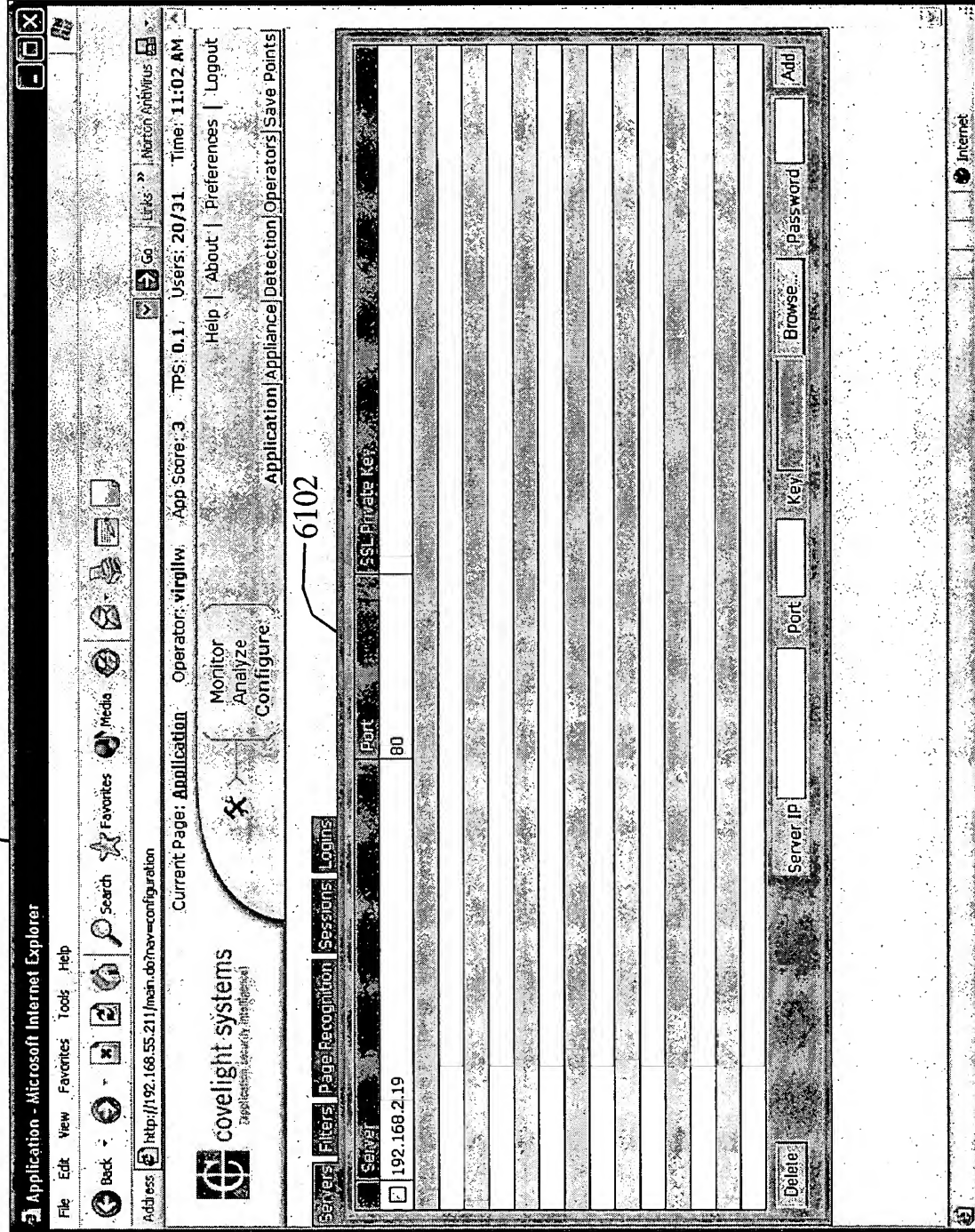


FIG. 61

6200

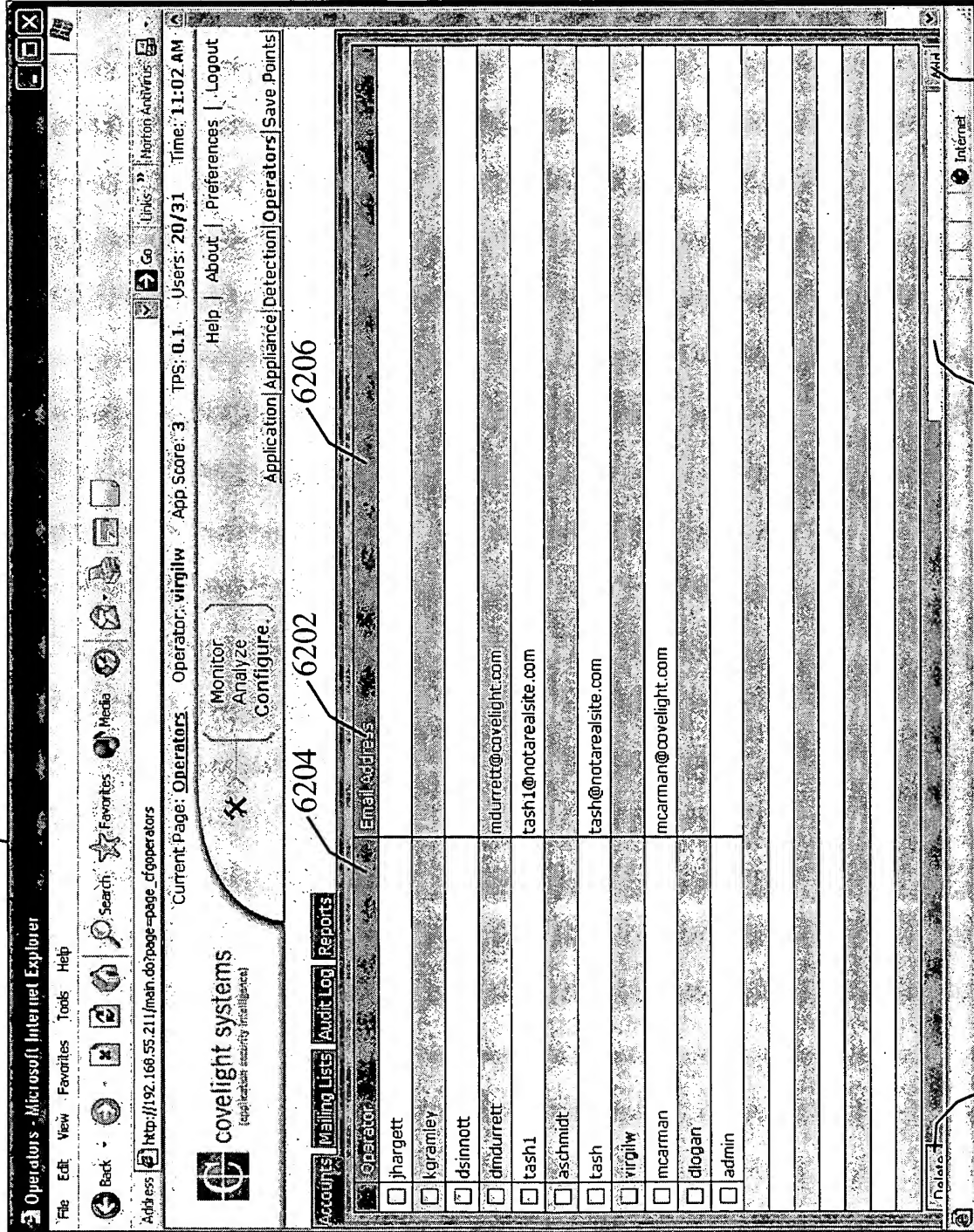


FIG. 62

6208

6212

6210

6300

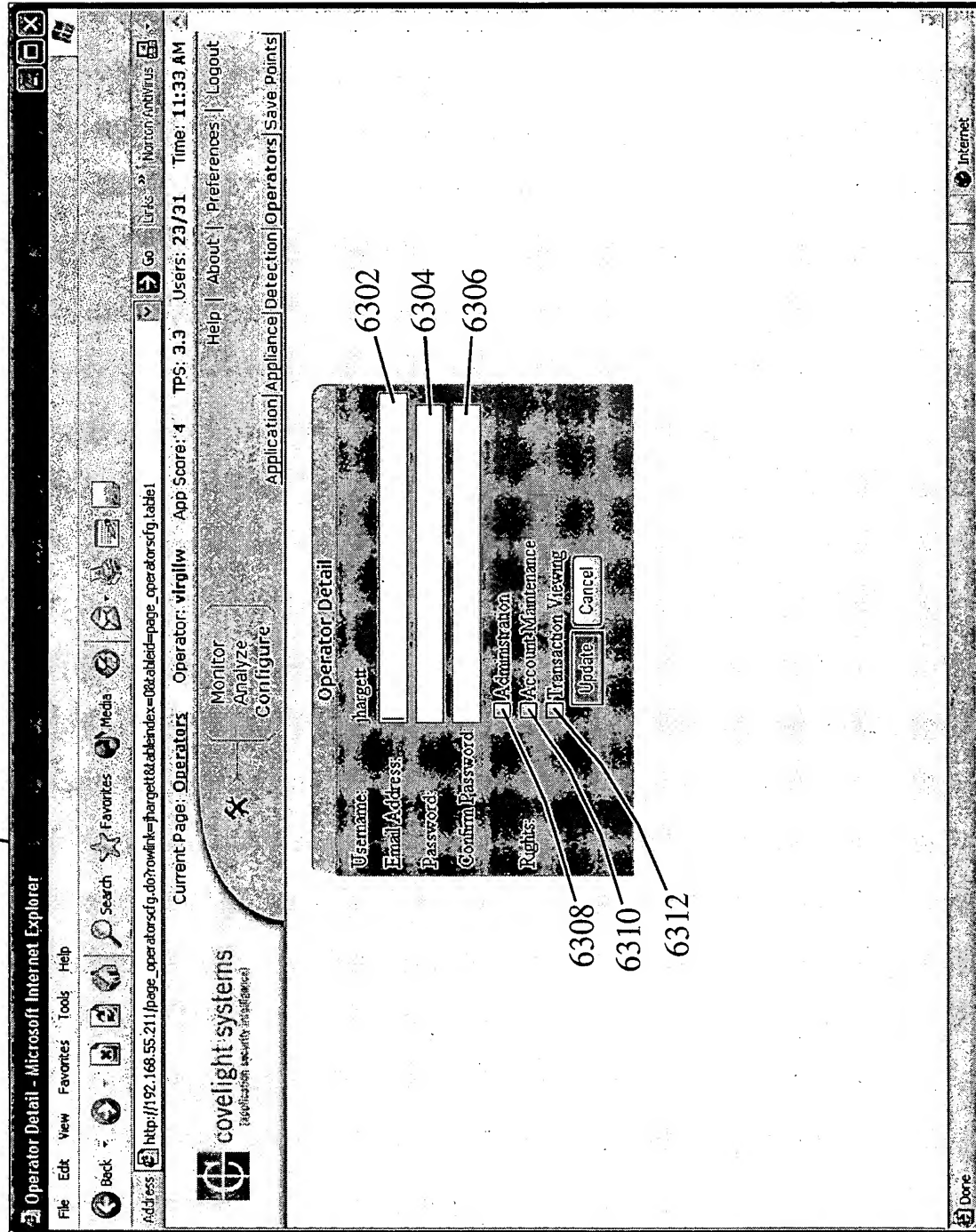


FIG. 63

6400

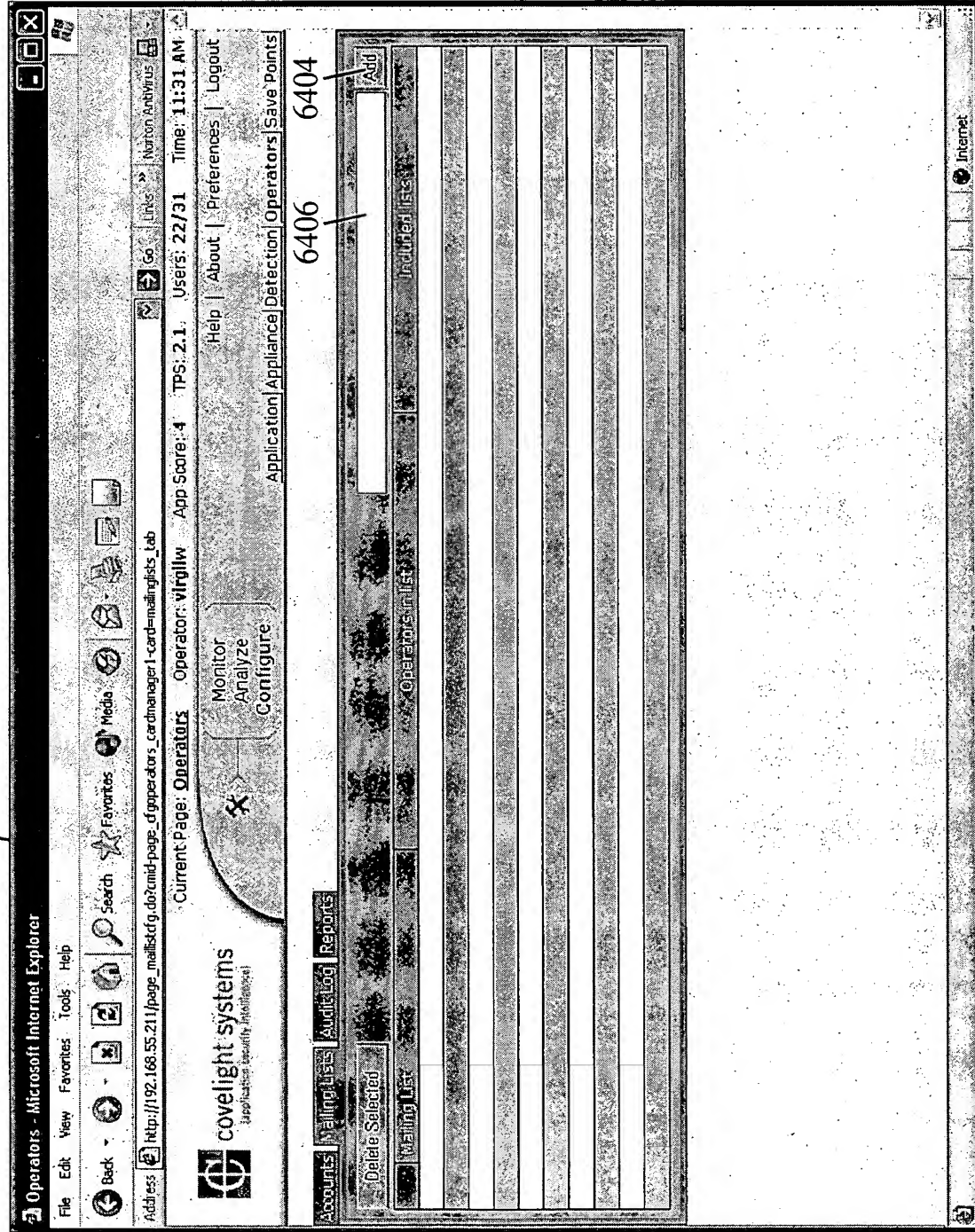


FIG. 64

6500

Operators - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Search Favorites Media

Address: http://192.168.55.211/page_operatorsCfg.do?mid=page_of_operators_cardmanager1-card=auditlog_tab

Go Links Norton Antivirus

Users: 22/31 Time: 11:32 AM

TPS: 2.9 App Score: 4

Operator: virgilw

Monitor Analyze Configure

Help About Preferences Logout

Application | Appliances | Detection | Operators | Save Points

6512 6514

Export CSV Export XML

6508

6506

6504

6510

6502

Date	Message	IP Address	Operator
1/16/04 11:28 AM	Login successful	192.168.55.101	virgilw
1/16/04 10:57 AM	Login successful	192.168.55.101	virgilw
1/16/04 10:11 AM	Changed operator virgilw refresh rate to 30	192.168.55.17	virgilw
1/16/04 10:11 AM	Changed operator virgilw refresh rate to 30	192.168.55.17	virgilw
1/16/04 9:30 AM	Login successful	192.168.55.17	virgilw
1/16/04 9:27 AM	Login successful	65.81.86.237	dmdurrett
1/16/04 9:26 AM	Login successful	192.168.55.17	virgilw
1/16/04 8:47 AM	Login successful	65.81.86.237	dmdurrett
1/16/04 8:47 AM	Logout successful	65.81.86.237	dmdurrett
1/16/04 8:17 AM	Login successful	65.81.86.237	dmdurrett
1/16/04 7:37 AM	Login successful	65.81.86.237	dmdurrett
1/15/04 7:34 PM	Login successful	192.168.55.101	virgilw
1/15/04 7:34 PM	Login denied for admin	192.168.55.101	?
1/15/04 7:14 PM	Login successful	192.168.55.101	virgilw
1/15/04 6:34 PM	Login successful	192.168.55.10	dmdurrett
1/15/04 6:04 PM	Login successful	99.132.60.166	jhargett
1/15/04 5:46 PM	Login successful	65.81.86.237	admin
1/15/04 5:24 PM	Login successful	192.168.55.10	dmdurrett

Accounts Mailing Lists Audit Log Reports

Refresh

Showing 1-18 of 624

Internet

FIG. 65

6600

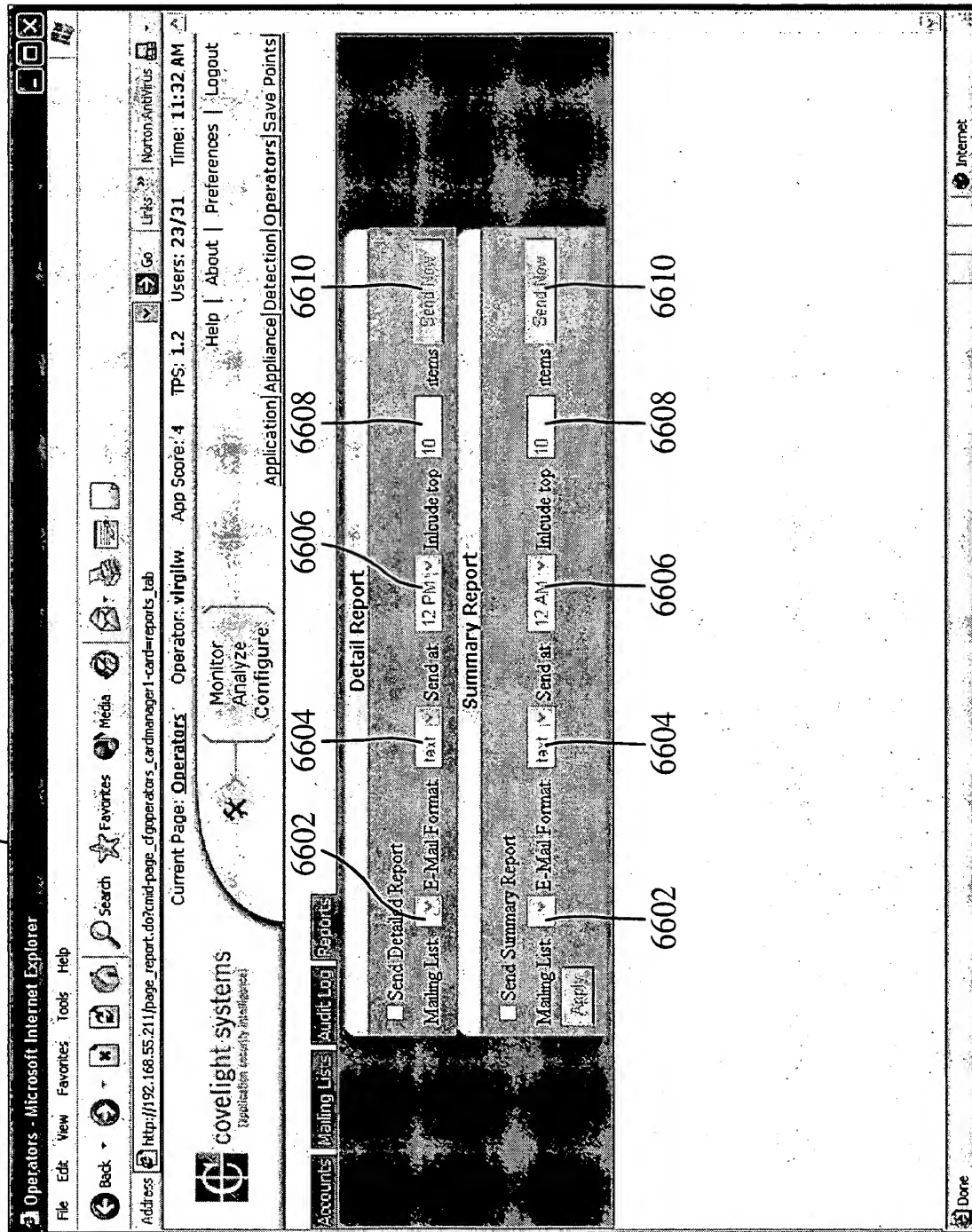


FIG. 66



FIG. 67

6800

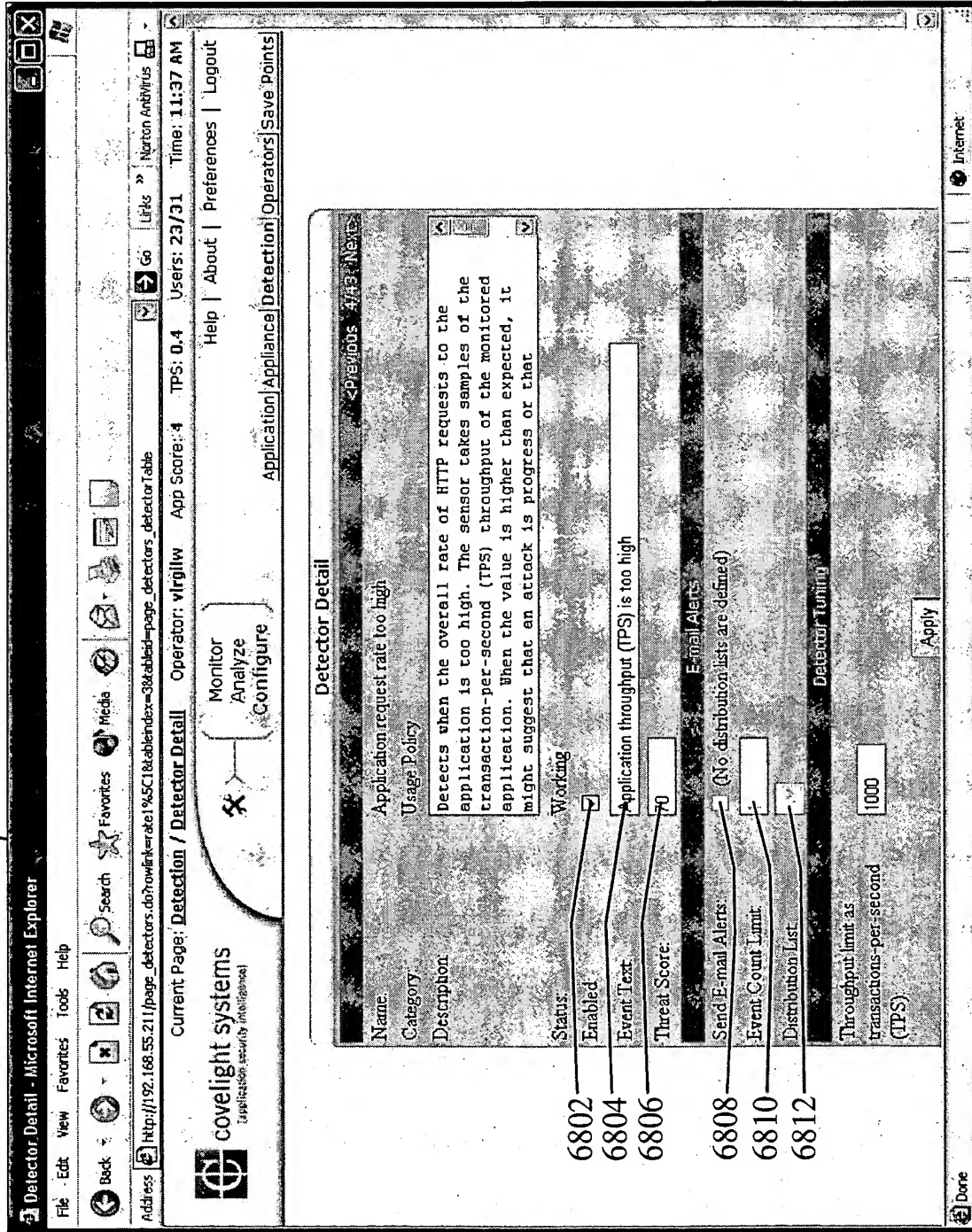


FIG. 68



FIG. 69

7100

Access List Detail - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Address http://192.168.55.171/detail_uai.do

Google Search

Current Page: Detection / detail_uai Operator: admin App Score: 0 TPS: 0 Users: 0/12772 Time: 2:40 AM

Help | About | Preferences | Logout

Application | Appliance | Detection | Operators | Save Points

Monitor / Analyze / Configure

Access List Detail

Comments	User	IP Address Pattern	IP Address
test	7112	7116	192.168.55.*

Disabled Detectors

Detector	Abnormal node error rate	Abnormal node error rate	Abnormal node error rate
Abnormal node error rate	7122	7128	7132

Scoring Adjustment

From Day	From Hour	To Day	To Hour	Score Adjustment
Friday	6 PM	Sunday	8 AM	100%

Done

7102

7114

7110

7124

7126

7104

7120

7118

7108

7138

7140

FIG. 71

7134

7136

7130

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